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**Connection to Nature at the Building Edge:
Towards a Therapeutic Architecture for Dementia Care Environments**

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ABSTRACT

Residential dementia care environments were investigated to discover a potential therapeutic role for architecture by facilitating a connection to nature for residents. A study of 'place as process' included over two years of observational data highlighting multiple factors of the built and social environment that challenged or enabled sensory stimulation and nature-related activities. 'Nature' was defined and SLANT was developed to quantitatively assess fourteen facilities for their potential to provide a 'connection' to nature.

The Edge Space Study facilitated sensory stimulation and social interaction and assisted the ability of people with dementia to express themselves creatively, including using nature symbolically, for ethical reasoning, introspection and personification. Because edge spaces supported social interaction while affording natural stimuli, these informal dialogues enabled manifestations of selfhood which contributed to well-being. People with dementia used nature as a tool to communicate.

A discourse analysis method based on relationships was developed and demonstrated which contributes to research on selfhood in dementia. The Prosentia Hypothesis was proposed to test the key mechanisms of beneficial human-environment interactions involving people and nature within the context of relationship. Contributions also include the 'triangle conversation' interview method and the concept of 'time frame identity.'

The edge space typology showed therapeutic potential by affording a person the tools and opportunity to explore emotional and spiritual issues. Such benefits are possible if care practice is routinely involved. Design guidance is proposed for edge spaces and for connection to nature in residential care homes, illustrated with examples from existing facilities. This thesis argues for an integration of architecture, landscape and care practice, a re-conceptualisation of the building edge as permeable and inclusive, advancing a new paradigm of integration and creativity over exclusion, separation and learned disability.

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INTRODUCTION

‘A place is a center of meaning or field of care based on human experience, social relationships, emotions, and thoughts.’ (Tuan, 1977)

‘I took Mary to the local park in her wheelchair on a bright autumn day.

Mary had not spoken for some time and was considered to be very withdrawn. On a childish impulse I began to run through the leaves, scattering them in the air. Mary lifted her head, began to clap her hands and say, ‘Run, run’. We had a great day.’

Sally, London (Alzheimer’s Society, 2005)

0.1 INTRODUCTION

This thesis concerns the importance of nature in the lives of people with dementia, how a residential living environment facilitates a connection to nature for the residents, and the potential therapeutic role of architecture in providing such a connection. Three pieces of original research are presented. The third study suggests that interactions between people with dementia and nature, facilitated by the built and social environment, contribute measurably to their well-being.

This introduction presents the research objective, aims and motivations, and then gives an overview of the research problem introducing the main issues and concepts. These include dementia (the disease, the human experience of cognitive impairment, the care pathway and clinical treatment modalities), dementia care environments (sensory stimulation and sensory environments), researching dementia environments (theory, scope and methods) and the structure of the thesis. This introduction is intended to demonstrate within dementia research the potentially therapeutic aspects of human-environment interaction and to frame the present study within that paradigm.

It is commonly understood that the built environment influences human behaviour. This holds true even more so for people with cognitive impairment, since smaller changes have greater effect on those less capable of influencing the changes or of controlling their own environment (Taira, 1990). Within architectural research, interactions between people with dementia and their domestic environments are of growing interest,

as findings are of concern to a wide range of stakeholders, including care practitioners, design and build professionals and policy makers (Department of Health, 2003, 2005; Department of Health and CSIP, 2005; Hanson, 2002; ODPM, 2005; Valletly, et al., 2006). It is now generally accepted that dementia is a disability (Page & Stewart, 2001) and that people with dementia function at very different levels with the same degree of neurological damage (Marshall, 1997). The environment is thought to be prosthetic and can in fact contribute to improvement and rehabilitation (Lawton, Fulcomer & Kleban, 1984) by supporting cerebral function, creating the opportunity for the person to be more self-reliant with greater personal choice (Dunlop, 1995). Also, environmental support through design as well as attention to the human factors can minimize memory failures and support greater independence (Charness & Holley, 2001). Such support leads to increased well-being, since to negotiate the environment helps people with dementia maintain dignity and self-respect. It is therefore understood that the environment plays an important role in the care and treatment of Alzheimer's disease (Marshall, 1997; Zeisel & Raia, 2000; Zeisel et al., 2003). For instance, elements in the environment that evoke emotions and those that touch hardwired universal memories can be used to trigger memories (Zeisel, 2005). Research involving design interventions in dementia care environments has led to measurable differences in behaviour, many of which will be referenced in this text. Results have populated an increasing database of 'evidence-based design' (EBD), accessed by environmental design professionals and care practitioners, which inevitably feeds into the design of new and remodelled care settings (Calkins, 2001, 2005).

However, 'environment' goes beyond the physical aspects and includes the social sphere – care practice, management and the person themselves. A synthesis of these dynamic elements and forces determines the experience of a place (Calkins, 2001; Cohen & Weisman, 1991). An ecological approach to research in dementia care environments links these physical and social factors. Studies that investigate both the physical environment and the interaction of people with dementia and their carers within that environment are needed (Cutler et al., 2006).

Furthermore, a dementia care environment has increasingly been seen as capable of reaching towards therapeutic goals (Teresi et al., 2000). Such goals are defined as "desired relationships between people with dementia and the environments they

occupy..." (Cohen & Weisman, 1991). If also, the role of the social and physical environment is seen to contribute to the positive attributes of care by providing patterns of ongoing activity typical of residential settings (Coons, 1991), then the question of design has to do with developing desired relationships between these mediating factors. It seemed plausible that researching human-environment interactions in dementia care could result in evidence for the design of a potentially therapeutic space. This research direction is supported by others who have said that 'knowledge of the design criteria for specific physical environments for elderly people with dementia...is a very important scientific target with therapeutic implications for cognitive and affective disorders' (Valla & Harrington, 1998), and also in design guidance which addresses multiple aspects, with the result of promoting personal dignity, avoiding dependency, maintaining relationships, and promoting personal control and self-reliance (Calkins, 1988).

An important aspect of a therapeutic approach is engagement by the participant. Person-centred therapy pioneered by Carl Rogers (Rogers, 1961) suggested that the client should have as much impact on the direction of the therapy as the psychologist. Importantly, the environment must afford the possibility for actualisation.

'I have found that when man is truly free to become what he most deeply is, free to actualise his nature as an organism capable of awareness, then he clearly appears to move towards wholeness and integration.'

(Rogers, 1990, p. 27)

Dementia reduces a person's ability to self-initiate – to take the initiative to interact. Mechanisms such as music and dance (Aldridge, 1994; Palo-Bengtsson & Ekman, 1997; Sherratt et al., 2004) which afford meaningful engagement, allow the person to actualise themselves within their environment.

'Anecdotal evidence suggests that quality of life of Alzheimer's patients is significantly improved with music therapy, accompanied by the overall social benefits of acceptance and sense of belonging gained by communicating with others. Music therapy, when based on clear treatment objectives can reduce the individual prescription of tranquillising medication, reduce the use of hypnotics and help overall goals of rehabilitation. Mood improvement and self-expression, the stimulation of speech and organisation of mental processes; and sensory stimulation and motor integration are promoted.'

(Aldridge, 1994, p. 275)

Healing arts therapies play an increasingly important role in dementia care. They have as a goal the ‘transformation of care and therefore of life of the person’ (Kasayka, 2001, p. 16). Their efficacy lies in the fact that ‘...significant meaning and beauty can emerge from pain, confusion and trauma’ (Innes & Hatfield, 2001, p. 16). Furthermore,

‘each of the healing arts therapies has the potential to make a connection or reconnection to beauty and therefore to the joy of a significant life... participation in beauty erases the boundaries between persons and overcomes distinctions... beauty inspires us to celebrate our common humanity...’

(ibid. p. 17)

This potential to participate in beauty lies at the door step of architecture, as buildings are embedded within the constant presence of the natural world.

For the purposes of this research, the term ‘nature’ is defined as ‘plants, animals, earth, water, sun, sky, air, season and climate.’ Throughout the remainder of the thesis when the word ‘nature’ is used, this working definition will be ascribed. Only in light of new data will this definition be reviewed and revised.

Successful precedents for the use of nature as a mechanism for mental health can be found within the practice of therapeutic horticulture. A further incentive lies in knowing that the body of work supporting the therapeutic benefits of nature for people with dementia is generally weakened by a lack of research evidence. For these reasons, the mechanism of ‘connection to nature’ was chosen as the topic of this research.

‘Connection to nature’ is defined as ‘sensory enjoyment of plants, animals, earth, water, sun, sky, season and climate’. The overall research objective has three prongs and is stated below followed by the aims and motivations. Specific research questions are given at the beginning of Studies One and Two, the results of which inform and enable Study Three. Key findings are given for each study in relation to the research questions and to other research. Strengths and limitations of the studies are given and the implications for dementia care, research and environments.

0.2 RESEARCH OBJECTIVE

The overall research objective, from which the aims are derived, is therefore:

To understand the importance of nature in the lives of people with dementia, how a residential living environment facilitates a connection to nature for the residents, and the potential therapeutic role of architecture in providing such a connection.

0.3 AIMS AND MOTIVATIONS

This section will present the overall aims of the work and the personal motivation for the inquiry. But first it will explain why people with dementia living in residential care environments were chosen as the focus of the research. Residential care is often the only option open to a person with dementia once they are no longer able to cope at home (Davies, 2001; Davies & Nolan, 2003; Department of Health, 2001). This is because extra-care sheltered housing, which is not yet widely available, is only recently being designed intentionally for people with dementia (Vallely et al., 2006). When a person does move home their relationship to nature will change simply as a result of the move into a different living environment. Anecdotal information from the author's landscape design clients between 1989 and 2001 indicated that this move from one's own home and garden into a care facility (often with no access to a garden) altered the resident's relationship to nature, often for the worse. As well as a diminution of connection to nature, relocation can be very stressful (Davies & Nolan, 2004; Tinker, 1997) - leaving their own home; knowing they might never be well enough to return to it; and often in fact having to sell their own house to afford care. Hence, relocation into care may result in stress, anxiety or depression. Nature-related experiences may ease the adjustment process, given the evidence for the spiritual benefits of nature (Baldacchino & Draper, 2001), the importance of spiritual change and development in the ageing process generally (Dalby, 2006) and specifically in dementia (Barnett, 1995; Everett, 1999; Goldsmith, 2001; Killick, 2004; MacKinlay, 2003; McFadden, 2000; Thibault, 2003). Also, residential care intends to provide a 'homelike' setting and design guidance calls for this, but how nature is integrated into that ethos through environmental design is not straightforward. Therefore, the choice of residential care as a setting for the research is a response to the needs of environmental design for dementia care. To accomplish the research objective requires these three aims:

- To determine if and why nature is enjoyable to people with dementia

- To develop a tool to assess the potential of residential care environments to provide such a connection to nature
- To investigate an interaction between people with dementia and nature, facilitated by the built and social environment, and contributing to spiritual and emotional well-being.

There are several motivations for the work and the focus on nature and care:

- Care practice - The literature on dementia environments may consider social or physical aspects of environment, but not often a handshake between the two. Nature is usually discussed as an amenity within the environment, but not as an active component of care practice. With nearly 18 million people with dementia world-wide, care for people with dementia is of international concern (Alzheimer's Society, 2006).
- Behaviour - Research into the built environments of dementia care is not usually about design to enable pleasure-seeking behaviour, but often design to control or contain 'problem' behaviour (e.g. 'exiting attempts' and 'wandering')(Dickinson & McLain-Kark, 1998). The opportunity exists to see, if the environment was suitably enjoyable, if and to what extent such improvements might positively affect behaviour.
- Design - The opportunity exists to examine aspects of care settings to inform a more integrated approach to inclusion of nature in the design of living space.
- Spirituality - A disproportionate amount of the literature on dementia was found to address the medical and physical aspects of wellbeing as opposed to care of the whole person. To be concerned with the intersection of architecture and landscape, the built and the natural, and to seek ways that a care setting can allow for the reintegration of both, hopefully will result in a measure of spiritual wholeness for the person who quite likely will spend their final days there (based on a study from 1995-1996 that showed that by 30 months after assessment to residential care, 67% of severely cognitively impaired people had died (Netten et al., 2001).

0.4 **DEMENTIA**

Dementia is a term used to describe various different brain disorders that have in common a loss of brain function that is usually progressive and eventually severe. The structure and chemistry of the brain become increasingly damaged over time causing

gradual decline in the person's ability to remember, understand, communicate and reason (Alzheimer's Society, 2006). 'The term 'dementia' means a gradual failing of mental powers – memory, reasoning and comprehension. It also means changes in the social/psychological environment in terms of the patterns of relationship and interaction. It is impossible to distinguish between the two kinds of change but the dementing process is a consequence of them both (Kitwood, 1997). Scientifically, dementias are progressive, debilitating diseases of the brain which begin with confusion, memory loss and mild cognitive impairment which have been correlated with structural changes in the brain (Mace, 1990). Dementia is expressed as three levels of severity. A person with mild dementia still retains the ability to manage independently. Moderate means some help is needed in ordinary tasks of living. Severe means continual help and support are required. This section will discuss the types, incidence, prevalence and outlook; the experience of dementia; the care pathway and clinical treatment modalities, and the environmental and sensory treatments.

0.4.1 TYPES, INCIDENCE, PREVALENCE AND OUTLOOK

Dementia is a clinical syndrome characterised by impairment in multiple cognitive domains. These include memory, language, problem solving, judgment and abstraction, visuospatial abilities, and skilled movement (Sadavoy, 1991; Zec, 1993). Changes occur within the person as a manifestation of the disease process or as a psychological reaction to it. These include psychiatric symptoms (e.g. hallucination, delusions), behavioural disturbances (e.g. agitation), personality changes (e.g., irritability), and disturbances of affect (e.g. depression, emotional liability)(Burns, 1992, 1996; Gilley, 1993).

There are over 100 types of dementia, the most common being Alzheimer's disease which accounts for up to 55 per cent of all cases of dementia (Alzheimer's Society, 2006). Neuropathological changes in the cerebral cortex and limbic system lead to deficits in learning, memory, language, and visuospatial skills. Exactly where the pathological changes occur in the brain determine the cognitive dysfunction. There is often an unequal distribution of cognitive deficit, with severe impairment in some functions and relative sparing of others. Up to 26% of all dementias are caused by Lewy bodies (Zaccai et al., 2005), making it the second most common dementia type.

Symptoms are similar to Parkinson's Disease, including fluctuations of cognitive functions, alertness, and attention, visual hallucinations, depression and a tendency to fall (Department of Health, 2001). The presence of tiny spherical structures inside nerve cells leads to degeneration of brain tissue. Memory, language and concentration are affected. A third type, vascular dementia, is a consequence of strokes and/or insufficient blood flow to the brain, causing up to 20% of cases of dementia. A fourth type, fronto-temporal dementia, is usually focused in the front part of the brain and includes Pick's disease. Personality and behaviour are affected at first more than memory. There is also loss of emotions and insight, selfishness, personal neglect, disinhibition, gluttony, sweet food preference and 'wandering'. Other causes of dementia include palsy, Korsakoff's syndrome, Huntington's chorea, Parkinson's disease, Binswanger's disease, Creutzfeldt-Jakob disease (CJD), HIV and persistent head injury. Dementia is not a necessary part of the ageing process (Arendt, 2004), as evidenced by the growing body of research looking at mild cognitive impairment, dementia and normal ageing (Terry, 2006), and also at the number of healthy people over 100. But the common misconception arises because mild cognitive decline can be associated with normal ageing, for example 'benign senescent forgetfulness' (Kral, 1962), 'late-life forgetfulness' (Blackford & LaRue, 1989) and 'age-associated cognitive decline' (Levy, 1994). Furthermore, AZD is characterised by brain lesions, which 'may stem from the normal progressive increases in oxidative stress (OxS) throughout the body with age...' but these are also observed in 'non-demented individuals' (Harman, 2006, p. 454). The 'nun study' also found post-mortem evidence of brain lesions on non-demented subjects (Snowdon et al., 1996).

The various types of dementias affect a person in different ways relative to the affected areas of the brain (Zeisel & Raia, 2000). Dementia is usually progressive and irreversible although a small percentage are treatable (Chan, et al., 2006). Early diagnosis is encouraged as it gives access to treatment, allows planning of future care, helps explain behavioural changes and gives access to a wide range of rehabilitation approaches (Marshall, 2005).

The cause of brain nerve damage is unknown but research has shown risk factors to include age, genetics, occupation, education, mental stimulation, physical exercise, overall general health and environmental factors (Fabrigoule et al., 1995). One study in

particular found that low linguistic ability in early life was a strong predictor of poor cognitive function and Alzheimer's disease in late life (Snowdon et al., 1996). This same data set contained Sister Mary, the gold standard for the Nun Study, who had high cognitive test scores before her death at 101 years of age, despite having abundant neurofibrillary tangles and senile plaques, the classic lesions of Alzheimer's disease. This study points out etiological possibilities while underscoring the uniquely personal and yet somehow random nature of the disease.

Dementia is more common in women than men and the prevalence and incidence of the disease increase with age. The prevalence of dementia in people with learning difficulties is higher than in the general population. Dementia can progress for up to ten years or more and although it shortens life, the actual cause of death may be another condition or illness with which the body is unable to cope. In 2003 there were an estimated 750,000 people in the UK with dementia, about 1 in 20 people aged 65 and over, and 1 in 5 over 80 (Alzheimer's Society, 2006). Younger people are also developing dementia. There are an estimated 18,000 people with dementia are under the age of 65 (ibid.). It has been estimated that 30-40% of people with dementia are in institutional care (Torrington, 1996). This also holds true for Scotland where there are around 63,000 people with dementia, around 30% of whom live in care homes (Alzheimer's Scotland, 2005). It can be calculated that in 2003 35% of 750,000 people with dementia (262,500) were living in institutional care. Of the people with dementia, 154,000 live alone (Alzheimer's Disease Society, 1994; Department of Health, 2001).

0.4.2 THE DEMENTIA EXPERIENCE

While the cognitive and functional impairments are well known, and some were listed above, the person's subjective experience is less understood, resulting in underutilisation of the psychological resources and remaining abilities of the individual (Kitwood, 1990; Kitwood & Bredin, 1992; Sadavoy, 1991). Tom Kitwood understood the brain to be an adaptable organ, changing according to environmental demands, and saw the experience of dementia as a failure of understanding and care, more so than a failure of the brain. Within the disease, emotion and feeling are given a much larger place. There are lowered inhibitions - a return to the body and its functions. One lives closer to the life of instincts (Kitwood, 1997).

This section will give insight into the disease as it affects the individual. Generally, a person with dementia will experience changes such as a diminished mastery over their environment, a weakened ego and increased dependency. Initially,

‘...the weakened ego tries to protect itself from current and subsequent losses, often through defense mechanisms such as denial, projection, splitting, or withdrawal. As the dementia progresses, the individual struggles to maintain a sense of self and becomes increasingly dependent. The person may show an increasing need for reassurance and shadowing of others. Eventually defense mechanisms fail and the individual becomes more distressed, showing aggression, agitation, hostility, outbursts, catastrophic reactions, isolation, despair and loneliness.’

(Kasl-Godley & Gatz, 2000, p. 758)

While still described as a series of ‘stages,’ increasingly, the course of dementia is being conceptualised as an individualised journey. How dementia progresses depends on many factors, including the person’s physical make-up, emotional resilience and availability of support. Two people with the same type of dementia may have a wide range of symptoms with extreme variability. For instance, a person may feel the need to be on the move, walking constantly, while another may lose all interest in physical activity. Their personality may remain the same but become much more pronounced, or it may change dramatically, from amiable to demanding or from energetic to apathetic. Also, the severity of the dementia may be unrelated to other symptoms such as depression. Participants with mild dementia have reported more depressive symptoms and less life satisfaction than persons with more severe dementia, if there were few constraints on physical health (Zank & Leipold, 2001). Another aspect of the individual’s journey is the variability of symptom awareness, ranging from those who are aware of their impairment and those who are unaware, to those with mixed awareness. This aspect has implications for caregiver strategies for interacting with and offering support (Phinney et al., 2002).

Disinhibition is a symptom which can be expressed, not just through ‘inappropriate’ display or activity, but also, through creative abilities which can flower in the areas of music and painting, even as speech is lost (Mell et al., 2003; Miller et al., 1998). This emergence of new skills suggests that loss of function in one brain area can release new

functions elsewhere, offering ‘an unexpected window into the neurological mediation of visual and musical talents’ (Miller et al., 2000).

‘Persons with frontotemporal dementia were shown to develop artistic and musical skills which seemed to be linked to a progressive reduction in function of the left temporal lobe; and perhaps a lifting of inhibition by this lobe over other areas of the brain. In particular, right hemisphere temporal and parietal areas may have benefited from this reduction in inhibition, allowing certain visuo-spatial and musical abilities to flourish.’
(Robertson, 2000)

Of the five types of memory, three are affected by dementia:

1. episodic (memory for personally experienced events or material)
2. semantic (memory for general information)
3. prospective (remembering that something is to be done and then performing the action at a specific and appropriate time).

And two are relatively spared:

4. implicit (facilitation of cognitive processing based on experience but without the deliberate or conscious retrieval of information)
5. procedural (memory for skills, such as buttoning your shirt)

See (Miller & Morris, 1993)

As a result of memory problems and other difficulties, the individual relies increasingly on others, resulting in fear of separation, insecurity and the need for constant contact. Memory decline causes the past and the present to merge. If the images of the past ‘evoke a sense of pleasure and accomplishment’ they can support self-worth. Increasingly, the ability ‘to use others as a means to enhance one’s sense of self’ becomes impaired, resulting in extreme confusion, anxiety and psychotic defenses’ (Sadavoy, 1991).

‘The dementia sufferer needs the Other for personhood to be maintained... to offset degeneration and fragmentation...the self that is shattered in dementia will not naturally coalesce; the Other is needed to hold the fragments together. As subjectivity breaks apart, so intersubjectivity must take over if personhood is to be maintained.’
(Goldsmith, 1996, p. 285)

Individuals in earlier stages are more aware of their memory problems and may reflect grief over loss of intellect and capacity to function independently. Other responses include ‘self-blame, somatization, blaming others, minimization of the severity of the

impairment and denial of the condition' (Kasl-Godley & Gatz, 2000, p. 756). But mnemonic functions are differently affected in the disease as evidenced by studies showing that memories with emotionally laden material are recalled easier than neutral stimuli (Fleming et al., 2003)

A person living in a care home with dementia is usually aware that they are having problems with their memory, but that memory loss may be met with denial, anger or even humour, depending on the person. Activity sequences become impossibly difficult without prompting and eventually remembering how to do the activity is forgotten. A person who enjoyed gardening may initially forget how to do garden tasks, then forget they once enjoyed it and over time lose interest in the garden altogether. Even though initiating a task is often cited as problematic, reminiscing about previously enjoying the task is found to be enjoyable. Reminiscence is effective because it assists people in finding meaning and a consistent self, and because affective aspects of memories may persist even if factual content becomes difficult to recall (Woods, 1994). As well as reminiscence, people in the early stages of a dementia have been helped by support groups because they provide distress reduction, interpersonal connection and acceptance, feelings of competence, and practical assistance.

Confusion is often experienced by a person with dementia and has been associated with under-stimulation, lack of insistence or expectation that normal behaviours be performed and a non-reinforcement of desired behaviours. Mental stimulation and social interaction are thought to 'reduce confusion by activating unused neural pathways, providing encouragement as well as new ways of functioning' (Kasl-Godley & Gatz, 2000, p. 765).

Maintaining communication is vital to successful ageing (Bryan & Maxim, 1996). Because dementia affects one's ability to verbally communicate, a person must express their needs through non-verbal means. Even more significant is the language of the body - expression, gesture, posture, proximity - which conveys emotion and feeling with great authenticity (Kitwood, 1997). If needs continue to go unmet they can result in new needs and behavioural symptoms (Kovach et al., 2005). People with advanced dementia may be completely unable to make themselves verbally understood. However, there are also episodes of lucidity (ELs) or 'spontaneous intermittent remissions' which

are characterised by confirmation and communion during conversation (Normann et al., 2002). These events of clear, intelligent speech from a person with highly challenged communication skills seem to be prompted by an out of the ordinary stimulation such as a dog walking into the room.

0.4.3 CARE PATHWAY AND CLINICAL TREATMENT MODALITIES

In the UK, referral to a specialist mental health service is available for people with suspected dementia. Treatment includes ‘specialist care for persons suffering from behavioural and psychological symptoms of dementia, including advice on behavioural management for people in residential care and nursing homes’ and forms of medication such as antidepressants, individual and family counselling and support. Specialist treatment also includes interventions for carers of people with dementia such as counselling or short breaks (Department of Health, 2001).

In the care pathway printed below, in the far right column ‘Social services e.g. personal care, meals’ is the point at which a person can gain admission into a residential care facility. Treatments for dementia involve ‘explaining the diagnosis to the older person and any carers and where possible giving relevant information about sources of help and support; giving information about the likely prognosis and options for packages of care; making appropriate referrals to help with fears, worries, distress, practical and financial issues...; ..emphasising the unique qualities of the individual and recognising their personal and social needs; using non-pharmacological management strategies such as mental exercise, physical therapy, dietary treatment alongside drug therapy...(Department of Health, 2001).

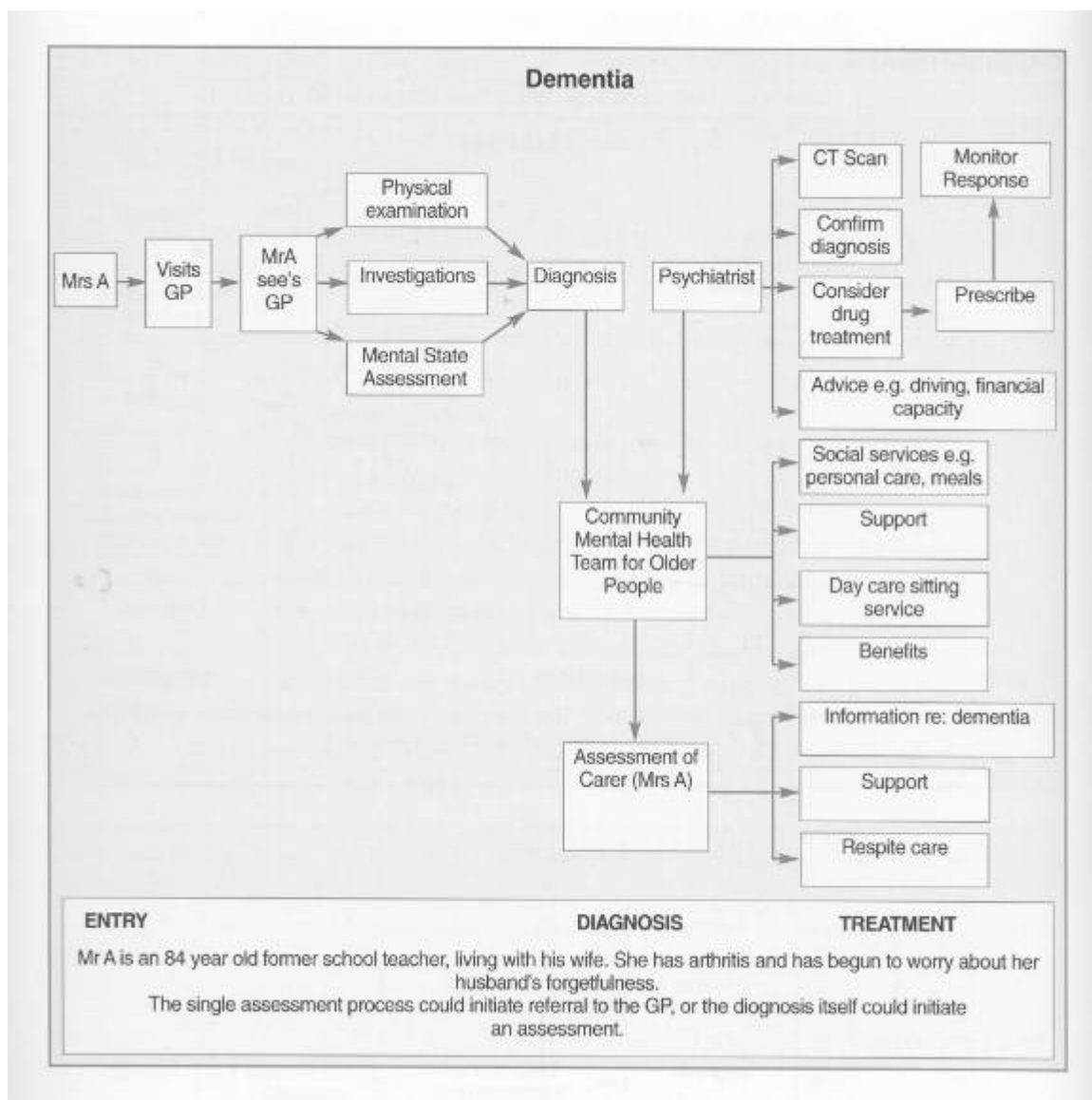


Figure 0.1 Care Pathway for Dementia, from (Department of Health, 2001).

There is no cure for dementia but pharmacological treatment is available. It is through a specialist assessment explained above that the person gains access to treatment with anti-dementia drugs in accordance with local protocols. Drugs are no cure but may stabilise some of the symptoms. Aricept, Exelon and Reminyl work by maintaining existing supplies of the chemical acetylcholine in the brains of people with mild to moderate Alzheimer's disease. The drug Ebixa works by preventing the excess entry of calcium ions into brain cells of people in mid to later stages of dementia. Also, antipsychotic drugs can be prescribed for more serious problems, such as delusions and hallucinations, serious distress or danger from behaviour disturbance. The National Institute for Clinical Excellence (NICE) publishes guidelines for use of prescription drugs for people with dementia. There has been concern over negative effects of

antipsychotic drugs for people with dementia, especially those in nursing and residential care homes (McGrath & Jackson, 1996). Some newer drugs are reported to have fewer side effects and clinicians are encouraged to prescribe according to published guidance (Levenson, 1998). Most importantly for this thesis research is the rise in non-pharmacological treatment approaches. Evidence is building that some psychosocial therapies may reduce depression, aggression, or apathy in people with dementia (Verkaik et al., 2005).

0.5 DEMENTIA CARE ENVIRONMENTS

Unlike many illnesses, dementia is of concern to environmental designers as evidenced by numerous books (Benson, 2001; Brawley, 2005; Calkins, 1988; Cohen & Day, 1993; Judd et al., 1998; Marshall, 1997) and journal articles (Keen, 1989; Marshall, 1992; Valla & Harrington, 1998). This is because design is not only viewed as a therapeutic resource to promote wellbeing and functionality (Day et al., 2000), but also as 'prosthetic' by compensating for cognitive deficits (Cody et al., 2002). There is also an element of environmental determinism implied in design as special care units are expected to reduce the incidence of behavioural symptoms (Keen, 1989; Maslow, 1994). This section will explain the connection between the symptoms of dementia and environmental design.

Symptoms of dementia which design guidance seeks to address include: cognitive impairment, memory loss, confusion, wandering, over/under stimulation and a lack of judgement. The home environment becomes increasingly problematic for the person with dementia and design attributes improve their ability to orient themselves, wayfind and maintain independence as long as possible. Such attributes provide cues and prompts, reduce over-stimulation, eliminate decision points, reinforce the meanings of domestic spaces, provide reassurance and familiarity, reduce risk of harm and prevent elopement, among other things. Because the therapeutic use of design is of particular interest to the thesis, the next section addresses the potential for sensory stimulation.

0.5.1 SENSORY STIMULATION

Treatment for dementia includes sensory stimulation either as an activity, such as an aromatherapy massage, or as a specialist multi-sensory environment, both of which will be reviewed in this section. The term ‘sensory stimulation’ entered dementia care both from the warnings of sensory deprivation studies (Solomon et al., 1961) and from the Snoezelen Room concept providing recreational and leisure opportunities to learning disabled people (Hulsegge & Verheul, 1987). Multisensory stimulation or MSS, (originally called Snoezelen) is a therapeutic activity requiring a specially equipped environment, usually a designated room. The term ‘multisensory environment’ has also been more recently applied to any place designed to engage the senses, even if that is not its sole purpose. For example, a kitchen provides tactile stimulation and smells from the storing, preparation and cooking of food and drink. Likewise a garden is abundantly sensory by the presence of natural materials – soil, wood, clay pots, flora, fauna, etc.

Dementia increases a person’s sensitivity to environmental stimuli because cognitive impairment limits her or his ability to understand the implications of sensory experience, and to effectively process that information (Cohen & Weisman, 1991). As a result, various ‘challenging’ behaviours such as agitation, shouting, fighting and wandering often result (Lawton & Nahemow, 1973; Sloane et al., 1998). Besides being prime indicators for admitting a person into institutional care, these behaviours are increasingly seen as attempts to communicate (Goldsmith, 1996).

The levels of stimulation which would be beneficial to a person in various stages of the disease are unclear. ‘What is sometimes not appreciated is that the environment can play a fundamental role in creating and perpetuating challenging behaviours’ (Archibald, 1997, p. 32). Multisensory stimulation delivers relaxing enjoyment and positive behavioural change to persons with dementia in a safe, secure space where therapy is not particularly the focus but stimulation of the primary senses is (Hope, 1997; Pinkney, 1994). It has been criticized for its lack of empirical research (Savage, 1996) and praised as a ‘failure-free, non-threatening, non-demanding (activity) with no expectations of an end result’ (Wareing, 2000). Although dementias are progressive there is some research which points to the rehabilitative possibilities of physiotherapy (Pomeroy, 1998) and the potential for regeneration of damaged nerve cells (Jobst,

1994). Although there is no agreement on effective environmental parameters for persons with dementia (Grant, 1996), studying dementia from a sensory stimulation standpoint may offer guidance into effective design of these therapeutic environments.

The sensory qualities inherent in the simple pleasures and daily activities of life are being revisited as an antidote to the institutionalized character of many special care units (Calkins, 2002; MacDonald, 2002). A kitchen for instance can provide both sensory stimulation and orientation as a 'sensory marker.' 'The atmosphere is considerably helped by the smell of food cooking which permeates through each eight bedroom house' (Tooth, 1994, p. 16). 'A kitchen can become a focus...where residents' impaired perception can be gently stimulated by smell and the activity that usually surrounds the area' (Dunlop, 1995, p. 19). Sensory stimulation is identified as being a 'particularly salient' attribute of the environment in a specialized dementia care unit, along with image, negotiability, and familiarity (Coons, 1991).

A literature review of sensory stimulation studies was undertaken and the results are presented here. The three types of studies – 9 activity interventions, 7 environmental interventions and one environmental observation study which will be discussed separately. The activity intervention studies including MSS, Snoezelen, massage or aromatherapy (Appendix C, Table 1). The environmental intervention studies and the observational study involved special care units (SCUs)(Appendix C, Table 2).

Of the activity intervention studies, all but one identified behaviour as the primary factor for intervention. The aromatherapy studies gave more conclusive results in this area than the multisensory or Snoezelen studies. Smallwood and colleagues show a 'measurable sedative effect of aromatherapy massage on dementia with a robust scientific paradigm' (Smallwood et al., 2001, p. 1012) and a reduction of behavioural disturbances by as much as 34%. Remington showed consistently reduced verbally agitated behaviours with hand massage (Remington, 2002), although no treatment group was better than the others for reduced effects over time. Ballard and colleagues (2002) showed an overall improvement in agitation of 35% by using lemon balm essential oil, with restlessness and shouting being the domains of greatest improvement. Holmes and colleagues used lavender oil in an aromatherapy stream and showed 'modest efficacy in the treatment of agitated behaviour in patients with severe dementia' (Holmes et al.,

2002, p. 305). The Baker study which compared MSS with an activity group reported no firm conclusion since behaviour deteriorated after sessions ceased and gains were quickly lost (Baker et al., 2001). However, the results during treatment were 'more spontaneous speech, relating to people better, more attention to and focused on environment, doing more from their own initiative, and enjoying themselves' (p. 95). This study was then replicated in the Netherlands and Sweden, tripling the sample size and found similar results (Baker et al., 2003).

The Snoezelen/MSS studies were similar in that staff experienced enjoyment and the residents experienced improvement during the sessions, but they were different in their results. The Moffat study (1993), which had no control group, reported positive effects during the sessions with no generalized effects to mood and behaviour. The MacDonald study (2002) showed no benefit to MSS over the activities control group and Kragt and colleagues showed more result with the experimental treatment than with the control (Kragt et al., 1997). These nine studies used a broad range of assessment tools and the study samples ranged in size from 11 to 72. Opinion is mixed as to the efficacy of these approaches for persons with dementia as evidenced by these studies which ranged from inconclusive (Baker, et al., 2001, 2003) to significantly improved (Holmes, 2002; Smallwood, 2001; Ballard, 2002). While some would argue that the real world is in essence multisensory and we should find ways to bring that experience back into dementia care (MacDonald, 2002), this review of the literature reflects the difficulty with proving that empirically.

The activity interventions were intended to reduce agitation, improve cognition, improve mood and behaviour, decrease stress, reduce negative auditory and visual stimuli and improve quality of life. Unintended but not unexpected results included pleasant diversion, distraction, pleasure, relaxation and enjoyment. The relationships the activities enabled were with other people, modified environments, inanimate objects, nature (through the herbal preparations), and themselves. The resident was cast in the passive role during massage and aromatherapy but took more of an active part during Snoezelen sessions. The activities were not place-specific but place was important in terms of being somewhere safe and familiar.

0.5.2 SENSORY ENVIRONMENTS

The second group of intervention studies will now be discussed, comprised of 7 environmental interventions and one environmental observation study. Three of the interventional studies took a 'global' view of the total environment of the SCU by examining the effects of stimulation at the unit level. The Swanson study compared two different types of care settings, a reduced stimulation SCU versus more traditional long-term care (Swanson et al., 1993). The measured effects of structured routines, separation of residents by different needs, and allowed wandering, were a reduction in catastrophic behaviour and an increase in spontaneous reactions between residents. Cleary and team conducted a pre-test / post-test design to measure weight, use of medication and restraints, and functional abilities on a 16 bed redesigned Reduced Stimulation Unit (RSU) (Cleary et al., 1988). They reported improved patient/staff interaction, weight gains, decreased agitation, and more interaction between patients themselves. The results can be attributed to increased positive stimulation (eye contact, touching the patients) as well as decreased negative stimulation (bustle of activity, presence of strangers, auditory stimuli). Bellelli and team conducted a multicentre study in Italy focused on staff and environment changes in eight SCUs (Bellelli et al., 1998). Part of the new care program was the reduction of negative stimuli (high auditory and fast staff movement), use of neutral colours, and the removal of obstacles to wandering. They recorded decreased behavioural disturbances, use of psychoactive drugs and restraints, anxiety, agitation and abnormal motor output.

Three studies examined interventions to the dementia care environment on a discrete level. The Cohen-Mansfield & Werner study considered the effect of enhanced environments on pacing (Cohen-Mansfield & Werner, 1998). Creating two new areas on the ward, a home and an outdoor environment, afforded the residents an enrichment of stimuli they were then free to choose to engage with. A positive impact on mood and behaviour, less trespassing, exit-seeking and agitation were reported. Lawton and team examined a Stimulation-Retreat model to diagnose, prescribe and apply either additional or reduced stimulation to residents in a controlled experiment (Lawton et al., 1998). This involved staffing and program changes to create a package of care that then proved marginally effective for residents. Although most functions worsened, there was an increase in external engagement. A third discrete intervention was the successful use of

cloth barriers to limit the visual and audible stimulation reaching residents during specific tasks. Namazi and Johnson found that the partitions blocked out over-stimulation from adjacent activities and improved residents' ability to attend to the activity at hand (Namazi & Johnson, 1992). The Jones study looked at nurse morale in terms of a high stimulation environment with a cross-section of two groups in different psychiatry units and found morale to be higher in the enhanced environment than on the traditional ward (Jones, 1988). The last of the environmental studies was not actually an intervention but an observational study leading to recommendations for interventions. It was important to include in the review as it dealt directly with sensory stimulation within the DCU as contributing to disruptive behaviours. The result of Nelson's work is an improved knowledge of how environmental factors, including bombardment of external stimuli, influence the evolution of disruptive episodes (Nelson, 1995). The environmental interventions expected results such as reduced negative stimuli (auditory and visual), decreased stress, improved behaviour, reduced pacing, wandering, and negative verbal feedback, and increased stimulation in terms of wayfinding and orientation. The intended relationships were with other residents, staff and visitors as well as with the environment in terms of signalling, restricting, or modifying behaviour. Relationships with other people improved when the resident/staff ratio was lower, when there was more personal contact, less rushing about, and less distracting stimuli. The relationships with the building improved when there were more places to go, places they could go to alone, a change of environment, access to nature, destinations, opportunities for choice, and barriers to close off distractions. When the relationship to place improved it resulted in more positive behaviour. Intervention activities as well as environments are largely intended to modify behaviour, reduce negative and increase positive stimulation.

Although there is widespread support for the idea that a person with dementia benefits from sensory stimulation, there is a lack of agreement on the most effective type, quality, quantity, and management. The advantage to an environmental intervention over an activity is duration of effect. Not unlike other non-pharmacological treatments, the environment must 'bring about a positive emotion and...maintain that positive emotion for as long as possible' (Zeisel & Raia, 2000). Positive effects occurred during and immediately after multisensory sessions and deteriorated once sessions ceased, when gains were then lost (Baker et al., 2001). Restlessness and shouting were the

domains of greatest improvement after aromatherapy (Ballard et al., 2002). There was modest efficacy in the treatment of agitation (Holmes et al., 2002), a higher degree of wellbeing (Kragt et al., 1997), and a marked reduction in challenging behaviour (MacDonald, 2002). Given the overall positive effects of the activity interventions it is surprising that so little work is happening with enriched environments where these positive effects could perhaps be extended over time. The analysis showed a correlation between positive results and interventions which enabled more relationships; with people and nature. Even so, there is no way to factor out the Hawthorne Effect. Stimulation from other people is a 'nested' intervention; both necessary and contributing to the main activity, which is then able to claim its effects.

Because the social environment provides stimulation and meaningful activity to a person with dementia (Morgan & Stewart, 1999) it is often difficult to separately identify causes and effects. But since it is clear that positive results are possible with both kinds of interventions, the potential exists for combining place-specific versus non-place-specific interventions. One possible justification for positive results from both the aromatherapy studies and the nature-enhanced environment (Cohen-Mansfield & Werner, 1998) is that they both incorporate living things or animate nature - essential oils, living plants, animals and people. The importance of the life force (people, plants, animals and sunshine) cannot be underestimated in quality of life for persons whose mobility and cognitive function have forced them to live apart from the natural world – the world our senses engage us and allow participation in.

Research investigations into the therapeutic design of environments for people with dementia increased over a 20 year period with 71 empirical studies published between 1980-1999 (Day et al., 2000) of which less than 10% mentioned sensory stimulation. The potential role of the environment in treatment is increasingly recognized, but recent reports show limited success of these specialist units in delivering high quality of life to residents. This introduction so far has underscored both the importance of stimulating the senses and the benefits of the natural world to the well-being of people with dementia, and has also highlighted the limitations of therapeutic interventions and the need for research to inform design. It will proceed by presenting current research theory, scope and methods in dementia environments and will end with an outline of the structure of the thesis.

0.6 RESEARCHING DEMENTIA ENVIRONMENTS

This section will give a brief overview of the theory underlying current research concerning dementia care environments and the scope and methods of previous work.

0.6.1 THEORY

Current research in this area draws theoretically upon work in environmental psychology and gerontology begun in the early 70s with research into environmental change in later life. Kahana (1974) developed a congruence model of Person – Environment interaction which examines the interface between task and person. Moos (1980) conceptualized environment as interactions between the person and their physical space. Sustained efforts by the late M. Powell Lawton and colleagues of the Philadelphia Geriatric Center in the early 1980s developed concepts such as the ecological model of adaptation and aging, which plotted ‘competences’ and ‘press’ (Murray, 1938) thus affording predictions for quality of outcome. This model suggested that “competences may be altered by under-, over- or threshold-level stimulation” (Lawton, 1985, p. 504).

Altman (1975) suggested that behaviour is a dynamic process worked out between the individual and society in order to attain personal goals. Related to this autonomy-support dialectic are the concepts of environmental proactivity (people taking action upon their environment or upon themselves) and reactivity (a response to external forces such as interventions to the person or to their environment). The ‘environmental docility hypothesis’, which suggested that ‘environmental press accounts for a greater proportion of behavioral outcomes as personal competence diminishes’ (Lawton, 1985, p. 506), gave way to ‘the ecological change model’ in which intervention to the person or environment made behavioural change possible. Furthermore, the ‘environmental proactivity hypothesis’ stated that a person may seek, choose or create an environment in order to satisfy need and preferences. Other concepts relevant to this work include defensible space (Newman, 1972) and lowered stress threshold theory (Hall & Buckwalter, 1987).

0.6.2 SCOPE

The scope of empirical research on design and dementia environments is growing and ranges from the very small to the large scale – from carpet patterns (Perritt et al., 2005) to the fabric of neighbourhoods (Mitchell et al., 2004). This is due to the belief that institutional environments can be designed to support memory and to reduce disruptive behaviour (Kasl-Godley & Gatz, 2000). Research includes facility planning (relocation, respite and day care, special care units, group size), research on environmental attributes (non-institutional character, sensory stimulation, lighting, safety), studies concerning building organization (orientation, outdoor space), and research on specific rooms and activity spaces (bathrooms, toilet rooms, dining rooms, kitchens, and resident rooms) (Day et al., 2000). Other research has approached behavioural ability from a specific task such as wayfinding abilities for people with Alzheimer’s disease in order to develop design guidance (Passini et al., 1999). Recent research has investigated, interactions at a neighbourhood level (Mitchell & Raman, 2000) leading to design guidance for dementia-friendly neighbourhoods.

Because behavioural effects of design are measurable, they contribute to a growing body of ‘evidence-based design’ (EBD). Within residential dementia care environments for instance, in setting out guidelines for the planning and design of a new 48 bed facility, it was noted that, ‘there is both empirical and theoretical support for the positive role of the physical setting in caring for people with dementia. Data suggests that modification of traditional room and unit layouts, along with complimentary modifications in the organizational environment, can slow or in some cases even reverse the declines expected over time in the behaviour of people with dementia’ (Weisman et al., 1990).

0.6.3 METHODS

Studies in dementia research use qualitative and quantitative methods to determine outcomes of human-environment interaction, usually adopting a mixed-method approach, for instance interviews, focus groups and note-taking from observation supplemented with survey data from a questionnaire. The goal of quantitative methods is to associate factors which more research might be able to correlate. Correlations

support hypotheses, build general theories and lead to predictive capabilities. The goal of qualitative methods is to discover themes rather than factors, by for instance using grounded theory (Charmaz, 1995), but both methods can lead to theory and prediction (Brown & Lloyd, 2001).

Experimental, interventional studies in dementia care environments correlate design features with behavioural changes of people with dementia by focusing on ‘problem’ or ‘disruptive’ behaviour. The following set of examples illustrates the variation of methods employed.

- A study was conducted which used visual barriers to affect ‘exiting attempts’ and ‘wandering’ in a dementia care unit. Results reported that ‘qualitative observations were conducted in addition to recording the attempted exits...The findings suggest that residents seemed to exit due to goal-orientation, exit-seeking behaviors, and attraction to the panic bar’ (Dickinson & McLain-Kark, 1998).
- A similar study design yielded quantitative results, reporting that ‘the closed blind reduced exiting by 44%. The cloth barrier was the most effective solution, reducing exiting by 96%. The combination of the blind and cloth barrier reduced exiting 88%’ (Dickinson et al., 1995).
- Another study on the effectiveness of a ‘specifically designed care program’ in eight dementia environments (termed special care units or SCUs) reported that: ‘cognitive, functional, and somatic health status, and use of psychotropic drugs and of physical restraints were assessed at baseline, and after 3 and 6 months in 55 consecutively admitted patients. The data show an overall reduction in behavioral disturbances and a decreased use of psychotropic drugs and physical restraints’ (Bellelli et al., 1998).
- Whether or not the overall decline in functional status of residents can be affected by the environment of an SCU was studied in over 800 facilities including over 77,000 residents, of whom over 1200 residents lived in SCUs. The study reported ‘no statistically significant difference was observed in the speed of decline for residents in SCUs...’ (Phillips et al., 1997)
- Yet another study looked at the effects of modifications to the physical setting of a special living unit for eleven people with severe memory loss. Along with staff training and modifications to the physical setting, softer and more domestic finishes and lighting were introduced, including the provision of private rooms, a den, living room, dining room, and kitchen. Results stated that ‘staff observations indicated positive resident response to therapeutic interventions designed to reduce problem behaviors such as night wandering, incontinence, and combativeness,’

quoted from (Weisman et al., 1990, p. 14)

This small set of examples of studies in dementia care environments shows the diversity of qualitative and quantitative methods in use to determine outcomes of interactions between people with dementia and their care environments. These types of studies are patterned on clinical drug trials with a pre-test, intervention, post-test study design on two groups of participants, one group being the control, to which the intervention does not occur. Quantitative assessment tools as well as qualitative methodology are used to determine effects of the physical environment on residents before and after a design intervention. Study participants may be subjected to a battery of psychological and cognitive tests. The level at which they fail these various measures is recorded as a marker of pre-test wellbeing. Following the intervention and often at intervals they would be re-examined with these same instruments to determine the amount of improvement or decline they have attained. The difference between pre and post test results for the intervention group and the control group is attributed to the intervention and a list of variables which must then be 'factored out.' The ability to measure behavioural effects has encouraged widespread use of psychometric methods, the name commonly used for 'the principles and methods of developing valid and reliable measures of intelligence, attitudes, skills, and other characteristics' (Marcel & Dijkers, 2003).

Another type of environmental study is termed quasi-experimental. An example would be the effects of a glider swing intervention on emotions, relaxation and aggressive behaviours with no control group (Snyder et al., 2001). Results showed an improvement in resting heart rate, overall mood, and in engagement of physical activity, suggesting that a multi-sensory exercise approach can be beneficial for individuals with Alzheimer's disease.

Research methods for investigating the physical environment also include post-occupancy evaluations (POEs), a survey method made popular in the 1980s by looking at housing (Cooper-Marcus & Sarkissian, 1986) and have continued to be used widely to gain the viewpoint of stakeholders once an environment has been in use for a period of time (Calkins, 2005; Marcus & Barnes, 1995).

Researchers are encouraged to consider 'the potential of different approaches for the appropriate assessment of key aspects of quality of life in frail older people' (McKee et

al., 2002). Likewise, in 'post-medical' geographical health research, more flexible approaches to the interview are encouraged. 'The 'peopling' of health research should also be accompanied by debate about what sorts of methodologies we employ in accessing these minds/bodies and voices. A critique of psychoanalytic approaches to geographical research argues that such 'models' of interpretation and management can mean that participants or research 'subjects' can be framed in almost diagnostic categories of behaviour' (Parr, 1998).

When using interviews in dementia research, routine protocol has been to elicit proxy accounts (from family and professional carers) rather than the account of the person with dementia themselves. Recently, researchers are beginning to publicise methods and benefits of a more user-led and person-centred approach, and are urging the inclusion of people with dementia themselves in the interview process. For instance, Evans explored the characteristics and suitability of extra care housing from a user perspective, and identified a range of strategies for overcoming methodological challenges to a more inclusive approach, including the role of gatekeeper, gaining informed consent and meeting the specific needs of people with dementia as research participants (Evans, 2005). Similarly, Chalfont and colleagues used interviews, observations and 'triangle conversations' to investigate the range of activities people with dementia took part in and enjoyed, either currently or in the past (Chalfont et al., 2006). In short, research methodology is evolving and new methods are being sought and tested. What is clear is that:

'There is more evidence about what does not work than what does. Every design project is a hypothesis – designers and providers believe configuring the space in a certain way will lead to a certain set of outcomes. What is often missing, however, is any systematic evaluation of how well the setting actually achieves the hypotheses.' (Calkins, 2005, p. 357)

In order to respond to the challenges and opportunities presented by research, design and care within residential environments for people with dementia, this thesis used a mixed-method approach including systematic evaluations of care settings, data gathered from people with dementia directly, observational data, and innovative research tools and methods developed in response to the research aims and objective.

0.7 STRUCTURE OF THE THESIS

The **Introduction** situated this research at the intersection of dementia care, nature and architecture by giving the background to the research problem and the aims, objective and motivation for the thesis. Working definitions for ‘nature’ and having a ‘connection to nature’ were given. Next, dementia was described including the diseases, the experience of the person, the care pathway, treatment modalities and sensory and environmental treatments. An overview of the scope, methods and theory of current research was presented, followed by this outline of the structure of the thesis.

Chapter One presents the literature review on the benefits of nature to humans, with particular attention to the benefits for older people and people with dementia. The range of mechanisms through which people benefit is explained including green nature or wilderness; daylight; home gardens and gardening; access to neighbourhood; therapeutic horticulture and therapeutic landscapes. Study One, a qualitative study to determine if and in what ways nature was important to people with dementia, is then presented with the research questions, methods and results. Findings are discussed as they relate to the questions posed and to previous research. Conclusions are drawn which then contribute to the design, method and tools required for Study Two.

Chapter Two characterises the built environment of residential care by giving an overview of the regulatory framework, the standards of care, registration, regulation, care provision, training of staff and inspection of homes. The types of accommodations as well as design guidance for dementia care environments are given. Dementia care buildings are then examined in Study Two which compares 14 different residential facilities for their potential for connection to nature. A purpose-built assessment tool called SLANT (Specifics for dementia care, Landscape, Architecture, Nature and Technology) is introduced and explained as to its need, scope and derivation. The results of Study Two are discussed as they relate to the questions posed and to previous research. Conclusions are drawn and together with Study One they inform the choice of the edge space as the focus for Study Three.

Chapter Three addresses the third aim of the thesis by investigating an interaction between people with dementia and nature, facilitated by the built and social environment. Based on the earlier findings about enjoyment of nature and the physical barriers within the care environment, a set of spatio-social experiments is proposed with the expectation that the interactions will contribute to the wellbeing of the study

participants. First, the concept of ‘edge space’ is defined by establishing essential physical criteria. The methodology also includes the criteria for social interaction between the researcher and the participants with dementia, as such interaction is a component of the intervention. The aims and methodology, as well as ethics and consent procedures are explained and study sites are described. Results are shown from the analysis of natural and built environment data, as well as discourse analysis. As expected the spatio-social interactions enabled well-being in the participants through communication which allowed expressions aspects of selfhood. The key findings and key advances of the study are listed in relation to previous research findings. The strengths and limitations of the work are discussed. Implications for research include the Prosentia Hypothesis derived from Study Three. Implications for design include the typology of edge space which is offered as design guidance, with two examples from existing facilities. Implications for care practice are also given.

Chapter Four gives a comprehensive summary of the three studies. The key findings and key advances of the thesis overall are listed in relation to the research objective and previous research findings. The strengths and limitations of the overall approach to the problem are discussed before design guidance and the concluding comments.

0.8 SUMMARY

There is scattered but growing interest in both the design and the care professions in the potential of nature to increase well-being for people with dementia, but studies linking the two within the context of both architecture and care practice are lacking.

Furthermore, there is little translation of research into design or care practice, except to vaguely recommend that ‘a connection to nature’ be provided. This PhD research has investigated a possible unifying role for architecture. The objective of the thesis is to extend current knowledge by articulating an interdisciplinary bridge, and to involve the healing power of nature in the building of it. To begin this task, this introduction has set out the aims and objectives of the thesis research. It went on to give an overview of the research problem introducing the main issues and concepts. Finally, the structure of the thesis was outlined.

CHAPTER 1 – NATURE AND DEMENTIA

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CHAPTER 1 – NATURE AND DEMENTIA

1.0 INTRODUCTION

The first aim of the thesis - to determine if and why ‘nature’ is enjoyable to people with dementia – is brought to light in the following:

‘Who or what makes the ‘best’ companion for someone with Alzheimer’s disease?...Actually what is needed is something I can feel I am still taking care of. Something that returns unrequited love, that gives itself away without expecting anything back, that wants to please me...all the time! Something that never ever judges me, just accepts me for who and what I am at that particular moment. Something that is not hung up about who I was, who I am, or who I will be. Something that is more concerned with where am I going to get water and food for today, rather than will I be around in 5 or 6 years. Something that is happy to be with me no matter where I live, or am forced to live (for my own good or course). Something that remembers little or nothing of yesterday, but does its best to make today the best day of its life, and quite unintended the best of my life. I vote for plants!’

(Taylor, 2005)

(Richard Taylor, PhD, is a 61 year old retired professor living in Texas, was diagnosed three years ago with early onset dementia)

While human-environment research into beneficial nature comprises a broad multidisciplinary literature, interactions specifically between people with dementia and nature have received attention only recently. Several reasons have contributed to this increasing interest - the findings from multi-sensory stimulation (MSS), the need for domestic and home-like settings and the recognition of spiritual needs, being the main ones. Nature now seems able to provide physiological, psychological and spiritual benefits and therefore could potentially contribute to the quality of care, increasing the well-being of people with dementia. As the care environment itself continues to sustain interest among researchers and designers, as evidenced by the recent special issue of the Alzheimer’s Care Quarterly on Environmental Innovations of Care (vol 6 issue 4), the time is right to examine the role of the environment in connecting people to nature for the benefits that it is known to provide. What Ulrich pointed out in 1999 still holds true, that:

‘research and theory on healthcare gardens is only at an embryonic stage of development...hindered by the shortage of research focusing directly on gardens...offset partially by the existence of a large amount of high quality

(multidisciplinary) research on important related topics, including environments, stress and health outcomes' (Ulrich, 1999, p. 22).

Of the research focused on gardens there are limited empirical studies involving people with dementia. The few existing studies investigated the effects of natural environments on behavioural measures such as decreased agitation and aggression (Cohen-Mansfield, 2001; Cohen-Mansfield & Werner, 1998; Mather et al., 1997; Mooney & Nicell, 1992). Such studies generated quantitative data from pre-tests and post-tests and contributed to evidence-based design (EBD) for dementia environments. Similarly to the method Ulrich adopted in his 'theory of supportive gardens' in which he drew upon research from other fields and applied it to healthcare gardens (Ulrich, 1999), this thesis draws upon research from other nature and garden-related fields and applies it to connection to nature specific to dementia care environments. By way of example, in a phenomenological study set in rural Nova Scotia exploring the meaning of gardens and gardening in daily life, 42 people were interviewed, 18 of whom were diagnosed with cancer. Results showed benefits of the garden to their physical, emotional, social, and spiritual well-being, and highlighted a key role of gardening as a coping strategy for living with stressful life experiences such as serious health problems (Unruh, 2004).

The first aim of this chapter is to review the literature supporting connection to nature – view, gardens, neighbourhood, social and therapeutic horticulture – and showing why nature provided in these aspects would benefit people with dementia. The second aim of this chapter is to draw conclusions from the review about the known benefits of nature for people with dementia in order to inform the direction of the first original piece of research. The review is organised into the following areas:

- 'Green' nature or wilderness
- Daylight
- Home gardens and gardening
- Access to neighbourhood
- Therapeutic horticulture – therapeutic landscapes

The third aim of this chapter is to present Study One which investigates the importance of nature for people with dementia from which conclusions are drawn. Findings contribute methodologically to Study Two. The fourth aim of the chapter is to define

‘nature’ as it was reported during Study One and therefore what the broad concept of ‘nature’ means in the thesis. A summary follows the conclusions.

1.1 LITERATURE REVIEW

1.1.1 ‘GREEN’ NATURE OR WILDERNESS

Multidisciplinary evidence attributes a wide range of human physical and mental health benefits to contact with what we might call ‘green’ nature or wilderness. The studies discussed below either highlight general benefits to the well-being of people in general or they provide evidence specific to the emotional, psychological and spiritual well-being of people with dementia. Studies from fields including environmental psychology and psychophysiology have investigated passive interactions with plants or perceived preferences for flowers and other plants (Parsons et al., 1994). For instance, empirical studies have confirmed that physiological benefits, including better sleep patterns, improved hormone balance, improvement in resting heart rate and diastolic blood pressure have been associated with views to natural scenery, being in a natural environment, having physical contact with plants and/or being exposed to natural elements such as daylight. Importantly, these same nature-based experiences have been felt by participants to be therapeutic, restorative or healing (Hartig et al., 1991; Kaplan & Talbot, 1983; Ulrich, 1983), the emotional, psychological and spiritual intangibles of well-being and quality of life.

Research on the benefits of nature began largely in environmental psychology. Work by the Kaplans on gardening satisfaction found that people had a desire to work in soil; wanted to see things grow; liked being outside; had an interest in learning about gardening; that gardening had the ability to sustain interest; was a valuable way to spend time, a diversion from routine; that they gained an aesthetic pleasure from plants, an opportunity to relax that provided a sense of accomplishment and that they enjoyed the feeling of producing some of their own food, of harvesting it and cutting their food expenses (Kaplan, 1973). This early work was followed by the development of the argument for the 'Restorative Environment' through the Attention Restoration Theory (Kaplan & Kaplan, 1990). The Kaplans applied their theory to the ‘nearby nature’ of gardens, further supporting the idea of the psychological benefits of nature and green

areas (Kaplan, 1995). Psychological benefits including residents' satisfaction with their neighbourhood were later attributed to having natural elements or settings in the view from the window at home (Kaplan, 2001).

While emotional restoration has been associated with views to nature, evidence showed that the benefits of an attention-restoring experience can be derived as simply as looking at nature. 'As well as sustaining life, natural environments help foster, to paraphrase John Muir, inner peace and a renewal of mental energy' (Hartig, et al., 1991). A classic study by Ulrich (1984) also supported the idea that the view itself was powerful in providing health benefits. Records on recovery after gall bladder surgery of patients in a suburban Pennsylvania hospital between 1972 and 1981 were examined to determine whether assignment to a room with a window view of a natural setting might have restorative influences. Twenty three surgical patients assigned to rooms with windows looking out on a natural scene had shorter postoperative hospital stays, received fewer negative evaluative comments in nurses' notes, and took fewer potent analgesics than 23 matched patients in similar rooms with windows facing a brick building wall.

Research on nature for health and well-being also found that people have a positive emotional response to flowers in the landscape, especially large-scale massings viewed up close at a distance of less than 2 metres (Sato, 2003). These findings, that flowers have a positive influence on emotional response, supported those of others, including Adachi and colleagues who examined floral and foliage displays (Adachi et al., 2000). Health benefits are also derived from physical contact with plants, often facilitated through horticultural activities in a therapeutic context. Although a biased study because it was sponsored by the Society of American Florists, the Emotional Impact of Flowers Study revealed that flowers have an immediate impact on happiness, have a long-term positive effect on moods, make intimate connections and are a symbol for sharing (Haviland-Jones, 2000). Another study showed that activities with plants promoted physiological relaxation, and working with flowering plants appeared to have a stronger positive effect on human emotions than non-flowering plants (Yamane et al., 2004). Emotional restoration has also been associated with a person's physical presence in nature. For instance, the passive impact of one's surroundings offers therapeutic benefits as individuals have a range of needs and move through phases such as the journey, sensory awareness, self awareness and spiritual awareness (Barnes, 1996). This

research elucidated the connection between emotional restoration and the environmental settings specifically chosen by individuals to assist their healing process. Studies have used EEG (electroencephalography) and EMG (electromyography) to measure participants' physical responses while watching projected images of landscapes. In a recent study, heart rate measurements were higher and physical relaxation responses were more positive when viewing scenes of natural recreation areas versus man-made parks. Another study showed that there were also higher psychological attention restoration, preference, and relaxation scores (Hung & Chang, 2004).

The idea of the garden as a restorative environment draws upon existing conceptualizations of restorative environments from the fields of healthcare and environmental psychology, landscape architecture, horticultural therapy and tourism (Betrabet, 1996). Environment and emotional well-being are interconnected in the design concept of a restorative place (Francis & Cooper-Marcus, 1992), of which, the garden has been firmly understood as both restorative and healing (Gerlach-Springs et al., 1998). The mechanism whereby natural environments succeed in providing a restorative effect is innate and one that can restore the mind's ability to concentrate (Hartig et al., 1991). Improvements in concentration were also found in older persons resting in a garden setting, and that the health effects arising from the experience and use of outdoor environments are greater, the more weak and fragile the person is (Ottoosson & Grahn, 2005). A review on responses to landscape and nature as early as 20 years ago provided evidence of both aesthetic and affective responses to the natural environment (Ulrich, 1983).

Healing Gardens: Therapeutic Benefits and Design Recommendations, published at the turn of this century, presented current thought on nature for health and well-being, firmly linking 'healing' with 'garden' within the context of a therapeutic landscape (Marcus & Barnes, 1999). The authors stated that:

... 'there are basic attitudinal shifts that take place when an individual is stressed or otherwise in need of healing... which affect perception, and in turn influence response to various environmental stimuli. Understanding how people *see* their environment, and how they react to it, is the most critical component of therapeutic design. This sensitivity to the 'feeling' created by a space – what type of experience the person will have when viewing or occupying a garden – must be understood and incorporated into design decisions' (pp. 87-88).

This understanding that the perception of a stressed individual influences their response to stimuli applies in particular to dementia because of shifting perceptions of the individual due to cognitive changes. Furthermore, the importance of understanding how people *see* their environment underpins the importance of person-centred research, eliciting the thoughts and feelings of the residents themselves as a way to understand behaviour within the built environment and their use of space. From a chapter in this book on the effects of gardens on health outcomes, Ulrich gave a Theory of Supportive Gardens in which the therapeutic capability of gardens ‘stems in large part from their effectiveness in facilitating stress coping and restoration’ (Ulrich, 1999). Contact with nature was one of the supportive design strategies. He advised that for gardens to ameliorate stress they must contain ‘verdant foliage, flowers, non-turbulent water, parklike or savannalike qualities, congruent nature sounds and visible wildlife,’ and for design to ‘capitalize on the restorative, unambiguously positive qualities of most nature content and configurations’ (pp. 74 -75). Such work continues as evidenced by a study concerning the influence of an outdoor garden on older people, in which it was found that contact with nature and the outdoors had a positive influence on mood and stress (Rodiek, 2002).

1.1.2 DAYLIGHT

Another aspect of connection to nature from which benefits derive is exposure to daylight. It was reported that long-term care residents often live in conditions of inadequate lighting and frequently receive inadequate exposure to high-intensity light (Sloane et al., 2005). From a report of this work by Sloane and colleagues the following review of evidence was drawn. Several physiological systems are triggered by daylight exposure including secretions of melatonin and other hormones as well as a circadian pacemaker in the brain (Kryger et al., 1989). Also, higher light levels have been shown to positively affect sleep, mood and behaviour in people with dementia (Forbes et al., 2005). These findings are especially relevant to this population since many people with dementia spend much of their time indoors where connection to nature is limited to what comes in through the window. Bright light treatment seems to be effective and may have an important role in managing behavioural problems in people with dementia (Burns et al., 2002). Furthermore, sleep disorder and depression are not only treatable

by bright light exposure (Chesson et al., 1999), but are common among long-term care residents who are typically not exposed to light levels capable of offering such a benefit (Ancoli-Israel & Kripke, 1989). This, and other studies, have shown that people in long-term care have little or no exposure to sunlight. This is due to limited mobility, lack of access to outdoors, and inclement weather conditions (Campbell et al., 1988; Savides et al., 1986). Furthermore, Ancoli-Israel and Kripke discovered several light-related aspects of sleep fragmentation in people with and without dementia, noting that many nursing home residents never experienced bright light during 24-hour recordings. But even indoor artificial lighting is inadequate in many facilities, as evidenced by a study of 52 dementia units in nursing homes which showed that illumination of over half of dining and activity rooms was below industry standards (Sloane et al., 2000).

Literature on sensory deprivation includes window studies in which the effects of diminished sensation are investigated. For instance, in a study of post-operative delirium in windowless intensive care units of hospitals, Wilson (1972) found that 'more than twice as many patients in the windowless intensive care unit developed post-operative delirium...and also a greater incidence of post-surgical depression among those patients in the windowless unit who did not develop post-operative delirium' (quoted in Collins, 1975). He attributed the increased incidence of delirium in the windowless unit to the absence of windows, saying that windows provide a necessary psychological escape from the traumas of the ICU, and that "the absence of windows can contribute severe additional stress" (ibid. p. 30). In a study of residential buildings in Scotland, for those residents with a window view, the psychological significance of sunshine, daylight, view and visual privacy was related to the amount of greenery and 'nature' visible, the amount and kind of activity occurring, and to the degree of brightness of the visible scene (Markus & Gray, 1973). Visual satisfaction was strongly related to the visible extent to grassy areas around the house, the size of the garden, the amount of open space and the distance between houses. Brightness, spaciousness and the amount of blue sky visible through the windows were also deemed important.

It is evident from the literature that daylight is beneficial and perhaps even more so for people with dementia living in care, as much of their time can be spent indoors where their only exposure to sun is from daylight that reaches into the building.

1.1.3 HOME GARDENS AND GARDENING

Private gardens make up around 3% of England and Wales - approximately 1 million acres (Spurgeon & Simpson, 2004) so it is not surprising that there is a growing interest in the domestic garden. Nature in the home is approached through the domestic garden and gardening activities, which have traditionally been used both by individuals and groups to develop a physical as well as a spiritual connection to place, epitomised by the daily acts of 'dwelling' (Oliver, 2003). This vital engagement between the interior and exterior of the home is a finding of recent research on environment and identity in later life:

'For many people, regardless of location, the 'home' environment included a significant component of the natural environment. This ranged from long-tended gardens where specific plants were related to people and events, to indoor and outdoor pots in windows, balconies and patios. It included views from certain windows, walking routes, and seasonal variance. Continuity and contrast with the natural environment of childhood and later stages of life helped to frame these aspects of the location within the respondents' self identity and sense of well-being.' (Peace et al., 2003, n.p.)

Home gardens contribute to mental wellbeing by providing an opportunity for self-expression, physical and physiological benefits, and restorative experiences (Catanzaro & Ekanem, 2004). Furthermore, domestic spaces of the home, such as the garden, have a significant influence on the scope that older people have to retain a sense of self-determination (Percival, 2002). There are social, physical and psychological benefits of gardens and gardening. In fact 'there is little doubt that home environments can have an enormous impact on the overall well-being of an elderly person' (Stoneham & Thoday, 1996) improving quality of life and contributing to healthy ageing. Also, qualitative evidence suggests that 'work' in the garden has many positive benefits, as well as simply 'being' in the garden as a source of pleasure and enjoyment (Bhatti, 2005).

The benefits of the garden and gardening to people with dementia, while providing a sensory connection to nature, perhaps more importantly, provides a mechanism for home-making and the practice of everyday life. Placement in residential care vastly unsettles one's sense of 'home' if they are without a method and a place whereby they can begin again to reconstruct it. Life in a care home can leave a person feeling

homeless, waiting and wanting to 'go home.' The role of the garden in home-making is thus explained:

'The garden provides us with a lens for understanding the creation of micro-social worlds in and around the home that are an important part of the practice of everyday life in old age....Thus the physical and social are intertwined and the creation of 'home' is embedded in daily lived experiences In this context I want to emphasise 'home-making', by which I mean the daily routines and activities, (necessarily embodied, gendered, and aged) rooted in time and space that contribute towards the creation and re-creation of the domestic sphere. Thus the home never 'is', it is always in the process of 'becoming';....The garden contributes to the social construction of home in a number of ways. These relate firstly, to home-making as embodied practice; that is, domestic routines of everyday life in an around the house are carried out by and through the gendered body. This allows us to see more clearly the home as action, as a series of bodily activities inter-acting with the physical dwelling. (Bhatti, 2006, in press)

The ageing process inevitably separates one from active gardening (Bhatti, 2005), and the loss of ability to maintain a garden does contribute to an older person's need to move house in later life (Sixsmith & Sixsmith, 1991; Tinker, 1997). In fact, the most commonly quoted reason that older people move into residential care is their inability to cope with their garden (Spurgeon & Spurgeon, 2004). The garden and domestic green nature in the sphere of the home are theoretically untapped resources for emotional and spiritual well-being, especially as they are laden with meanings derived from daily use (Sixsmith, 1991). Domestic spaces have 'a significant influence on an older person's sense of determination,' affecting their 'sense of continuity and choice' and 'embody personal and family-oriented priorities' (Percival, 2002). Living spaces, and this can be taken to include the garden, need to be 'adequate, accessible and personalised' (ibid.).

For older people, the outdoor environment around the home can be instrumental in reducing social isolation and contributing to quality of life, by increasing the opportunities 'for activities and interests, extending social horizons and breaking feelings of isolation from the outside world. Sitting out or walking in the open provides contact with plants and an opportunity to collect materials for hobbies such as flower-arranging or cooking. The garden can also be important in providing an additional private area to the house' (Stoneham & Thoday, 1996). The importance of the home garden is multi-layered with actual contact with nature being both a benefit and a mechanism. For instance, the garden plays a role in facilitating access to nature, which

in turn provides the mechanism for multiple levels of engagement which then contribute to improving a person's quality of life.

While domestic gardens and actual 'gardening' are largely missing in dementia care settings (replaced by maintained institutional landscapes), it would seem that given conducive circumstances, benefits such as those expressed here could be gained by people with dementia. The meaning and satisfaction of the garden in relationship to the home seems particularly relevant. A major survey on the role of private, urban gardens showed the perceived value they hold for human well-being through personal enjoyment (Dunnett & Qasim, 2000). Also, in a study of older people in garden apartment housing, the residents derived satisfaction from physical aspects of ground-level design and proximity to nature, while highrise residents experience greater attentional demands and confusion (Devlin, 1980).

1.1.4 ACCESS TO NEIGHBOURHOOD

Older people in Britain have had 'limited influence on the design of the public environment, and in many cases their surroundings... a whole host of features... act as barriers to people whose needs have changed through disability or age' (Stoneham & Thoday, 1996). This is true for the domestic environment but also in terms of access to neighbourhood - a largely neglected area of research with two notable exceptions. Neighbourhoods for Life was a research project carried out by Oxford Centre for Sustainable Development, Department of Architecture, School of the Built Environment, Oxford Brookes University (Mitchell et al., 2004a; Mitchell & Raman, 2000). The research aim was to explore ways in which the design of the outdoor environment affected the ability of older people with dementia to understand and navigate their local urban neighbourhoods. That the project was undertaken at all acknowledged the growing understanding of the role of the environment plays in influencing both functional capabilities and emotional well-being of people with dementia. There are many factors to overcome such as difficulties with orientation and memory, problems recognising and understanding where they are and remembering where they are going. Also, the difficulties of old age such as frailty, sensory impairment, poor mobility and reduced strength and stamina (Mitchell et al., 2004b). The study broke ground by applying existing literature and design guidance for the

needs of older people with dementia and the existing current knowledge of best practice for internal environments to the neighbourhood level, similarly to Ulrich's approach to applying environmental psychology on responses to nature to the healthcare environment (Ulrich, 1999).

Findings showed that 'familiarity, legibility, distinctiveness, accessibility, comfort, and safety all appear to have a major influence. Small street blocks with direct, connected routes and good visual access, varied urban form, and architectural features, and distinctive, unambiguous environmental cues could enhance successful orientation and wayfinding. Services and facilities within walking distance with adequate seating, lighting, shelter, and well-maintained, smooth, level, plain paving would ameliorate attending problems of physical frailty' (Mitchell et al., 2003). A project output was a checklist of recommendations for designing dementia-friendly outdoor environments to help housing associations improve the quality of life of older people with dementia in the outdoor environment (Mitchell et al., 2004b). The study confirmed 'the importance of legibility in using and enjoying their local neighbourhoods' and identified design features that make an area legible such as the character of street networks and the presence and type of landmarks. By focusing on designing urban areas that are explicitly easy to understand, navigate and access, the findings are relevant to all members of society' (p. 4).

While not dementia-specific, another recent piece of research examining the living environment in later life was carried out by researchers at the School of Health and Social Welfare, The Open University, Milton Keynes for the Growing Older Programme. One aspect of the neighbourhood that had a strong impact on how the person identified with it was its detail, complexity and interest (the level of urbanisation; social heterogeneity; material aspects of the built environment; and relative status and security also impacted on identity) (Peace et al., 2003).

The study suggested 'a number of key foci of interest that lie beyond the self and to which people make the connections that sustain environmental well-being and identity.' The study concluded that a life of quality is one where the sum of these connections is sufficient to satisfy the individual. These foci may include: 'a reachable neighbourhood with a level of security, complexity and accessibility that is compatible with personal needs, and a social community, at least part of which is accessible daily' (ibid. p. 3).

Such findings underscore the importance of and meanings associated with access to neighbourhood for older people.

1.1.5 THERAPEUTIC HORTICULTURE – THERAPEUTIC LANDSCAPES

Increasing evidence suggests that horticulture can contribute significantly to human well-being and mental health according to studies involving a wide range of clients, from residents of poor inner city neighbourhoods to children with Attention Deficit/Hyperactivity Disorder, and with benefits including lower rates of violent and property crime, lower incidence of aggression, greater life satisfaction, reduced attention deficit symptoms and strength of community (Kuo, 2004). Gardening activities can be stimulating to older people and can provide health and social benefits (Haas & McCartney, 1996; Lewis & Mattson, 1988; Ryan, 1992) but also can the physical setting of the garden itself. The knowledge that both nature-based activities and natural places can be purposefully therapeutic is evidential in health geography, in social and therapeutic horticulture and in psychotherapy practice. This section will briefly introduce these multidisciplinary perspectives on beneficial nature and explain their relevance to the thesis.

At the frontier of cultural geography a new understanding of place has been developing with respect to health, treatment and healing (Gesler, 1993; Kearns, 1993; Williams, 1998). For an overview of the connection between landscape and the treatment or healing of illness see Gesler (1992). Such spaces termed ‘therapeutic landscapes’ have been defined as ‘those changing places, settings, situations, locales, and milieus that encompass both the physical and psychological environments associated with treatment or healing’ (Williams, 1998). Furthermore, therapeutic landscapes are reputed to have an ‘enduring reputation for achieving physical, mental, and spiritual healing’ (Gesler, 1993). Within the field of health geography, landscapes are therapeutic through mechanisms including a sense of place, psychological rootedness, authentic versus unauthentic environments and tapping into the sensory experience (Williams, 1998). Each of these aspects of interaction between a person and their environment are relevant to well-being in dementia care.

Examples of geographical research include investigations into the benefits of community gardening for older people (Milligan et al., 2004). The study found that communal gardening on allotment sites created 'inclusionary spaces in which older people benefit from gardening activity in a mutually supportive environment that combats social isolation and contributes to the development of their social networks' (p. 1781). Community garden work was also found to assist people with severe and enduring mental health problems to achieve social inclusion and stability (Parr, 2005). This study found that gardens, gardening and nature are generally experienced as therapeutic by volunteers and staff; therapeutic effects include a variety of positive emotions and behaviours; and volunteers experience the therapeutic effects of gardens in both active and passive ways (p. 3).

A woodland settings research project used sensory workshops alongside in-depth interviews to explore the relationship between self and landscape (Bingley, 2003). In this work it was noted that 'engaging with psychotherapeutic methodologies has proved highly productive in facilitating adults to connect with and articulate their perception of landscape' (p. 329). Furthermore, 'an important aspect of psychotherapeutic methods is that they offer theoretical and practical means to explore, and reflect upon, areas of consciousness that generally remain hidden from our everyday awareness' (p. 342). A related study found that being outside was peaceful and helped to relieve stress and tension (Bingley & Milligan, 2004). Outdoor activities ranked almost four times as high in relieving stress as any other activity mentioned by the study participants (p. 61). Reasons for going outside included wanting to be alone, needing fresh air and wanting to feel free (p. 62). The therapeutic benefits to the participants were summarised thus:

'...a strong positive association with ancient trees, that were felt to confer a comforting, calming presence. Non-human agency, observable in the apparently independent existence of trees, woodland plants, animals and birds seemed to be another powerful and positive attraction for people when stressed.' (p. 67)

Health geographers have also recognised that the care-giving relationship has spatial dimensions, and hence there is a need to investigate the importance of place and its conceptualisation in the care of frail older people with dementia (Milligan, 2003). In this work it was possible to 'facilitate a more nuanced understanding of the importance of people and place in the construction and delivery of care to frail older people' (p.

455). This small sample indicates that health geography is providing spatially informed evidence that connection to nature is beneficial and therapeutic.

Another disciplinary perspective on beneficial nature is that of psychotherapy and therapeutic horticulture. Gardens are beginning to be used as routine settings for psychotherapy to engage adults with chronic and severe mental health needs (Linden & Grut, 2002). Similarly to art or music therapy in which the practitioners are trained and qualified to engage in healing work with clients, horticultural activities are also used for therapeutic aims. Horticultural therapy (HT) in the USA <http://www.ahta.org/> and social and therapeutic horticulture (STH) in the UK <http://www.thrive.org.uk/> promote the use of horticulture for health and wellbeing for a wide range of client groups. About 1,500 STH projects have been identified in the UK (Spurgeon & Simpson, 2004). A recent research project on Health, Well-being and Social Inclusion in the UK provided a current review of the literature on STH (Sempik, et al., 2002). Results from a national survey of over 800 active projects in the UK can be found at www.policypress.org.uk.

Several aspects of HT/STH will be discussed, including the definition of ‘therapeutic’, the prevalence of use, and the evidence base. There is no consensus on the definition of ‘therapeutic’ when applied to gardens and landscapes, nor on empirical methods of measuring outcomes of time spent there. These have resulted in the lack of an evidence base for the use and design of landscapes. STH and HT also consistently struggle to measure outcomes and lack much of an empirical evidence base as a result. Therefore, in ‘therapeutic landscapes’ while physiological benefits such as resting heart-rate and diastolic blood pressure have been measurably affected by visits to gardens, benefits mentioned in section 1.1 such as emotional restoration, stress reduction or even happiness have been reported only as anecdotal evidence.

Significantly, in STH/HT and psychotherapy, the therapeutic process is defined by a patient-client relationship, whereas with therapeutic gardens and landscapes, no such relationship is expected or required. Both natural benefits are potentially useful in dementia care and will be considered in the thesis research. This section has briefly demonstrated multidisciplinary evidence in support of the therapeutic potential for both nature activities and natural places. This body of literature lends theoretical support that dementia care environments coupled with human engagement from the healing

professions offer potentially therapeutic benefits by helping the resident to maintain a sense of place, psychological rootedness, sensory experience (Williams, 1998), stress relief (Bingley & Milligan, 2004), social inclusion and stability (Parr, 2005).

1.1.6 NATURE AND OLDER PEOPLE WITH DEMENTIA

There is general agreement among long-term care practitioners and landscape architects that nature provides numerous cognitive, physical and social benefits for people of all ages (Marcus & Barnes, 1999). This is particularly true for older people (Ottoosson & Grahn, 2005; Rodiek, 2002; van Loon, 2004), including older people in long-term care (Hazen, 1997). In a controlled study involving 62 participants over a 7 week period, a significant increase in psychological well-being was reported (Barnicle & Midden, 2004). On benefits specific to people with dementia the evidence is mostly anecdotal and qualitative, but does report social, psychological and health benefits (Borrett, 1996; Chapman et al., 2005; Copley, 2002). Mechanisms providing benefits include spending time outdoors, the healing power of nature, activities in the garden, animals (Richeson, 2003), multisensory exercise (Heyn, 2003), using nature to explore memories and create seasonal activities and using what's grown in the garden. When people with dementia are able to overcome physical challenges therapeutic benefits include self-esteem, success and self-confidence (Kwack et al., 2005). From studies involving people with dementia in horticultural activities the findings showed that such activities promoted cognitive, psychosocial, and physical benefits as evidenced from their interaction, initiation, concentration, and activity completion (Jarrott & Gigliotti, 2004). This study also reported that research involving people with dementia remains limited, even though 'implementation of HT programs in institutional dementia care programs is increasing' (p. 139). So while there is overall agreement that nature is of benefit to people with dementia and that environments can be built to support this benefit (Dunlop, 1995; Ebel, 1991; Mitchell & Raman, 2000; Noell-Waggoner, 2000; Pollock, 2001) there is still a need for empirical evidence.

In the design of care environments there is growing agreement that nature improves quality of life for people with dementia. An early example in Australia, noted for its domestic environment, included natural elements such as chickens within a secure garden area. The ADARDS nursing home in Tasmania, built and administered by the

Alzheimer's Association, provided domestic scale care for people with dementia at two-thirds the cost of a psychiatric hospital. It was designed so ambulant people with 'the most difficult behaviours' could live in an environment closely resembling a 'normal' house (Tooth, 1994).

A more recent study involving 65 nursing staff in 10 homes found that:

'...both indoor and outdoor plants were used as tools in the care work and staff believed that it had a beneficial impact on the environment of the homes. Plants created a lush, homelike atmosphere and improved the quality of indoor air... the contribution of the plants to the psychological and social well-being of the residents was prominent.... plants stimulated residents' senses, created positive emotions, and offered opportunity for rewarding activity.... (and) can contribute significantly to the well-being of individuals with dementia.' (Rappe & Lindén, 2004)

The concept of a natural area as therapeutic in dementia care environments draws on memory by providing people with the opportunity to reflect upon past experiences and environments, as was evident in the creation of a therapeutic park for the mentally frail (Rapelje & Crawford, 1981). The Eden Alternative (Coleman et al., 2002) promotes the inclusion of natural elements, including plants and animals, into care practice, with this philosophy reflected in the design of their nursing facilities, the training of staff and the overall changing of care culture. A more recent development by the same organization is the Green House concept for small nursing home environments. This involves a new purpose-built home as well as a change in nursing care culture and the inclusion of natural elements. Benefits of the Green House include reduction in staff turnover, increase in resident food intake and user satisfaction (Brawley, 2006).

1.1.7 REVIEW CONCLUSIONS

This review of the literature found that:

- So called 'green' nature or wilderness provides physiological benefits such as better sleep patterns, improved hormone balance, improvement in resting heart rate and diastolic blood pressure.

- Nature-based experiences were also found to be therapeutic, restorative or healing, contributing to the emotional, psychological and spiritual intangibles of well-being. Flowers in particular appear to stimulate emotions.
- Physical presence of nature is emotionally restoring, and experiencing or viewing 'natural' landscapes is preferred over man-made parks.
- Resting in a garden setting improves concentration, particularly for a weak or fragile person. Therapeutic benefits appear to be linked to a person's sensitivity to the space and feelings arising as a result.
- Exposure to natural light can positively affect the physiological systems in people with dementia resulting in improved sleep, mood and behaviour.
- Framed within the wellbeing and self-identity of many people is the home environment, including a significant component of the natural environments, such as windows, gardens, patios, views and walking routes. There are physical and psychological benefits of gardens and gardening for older people, not least of which are pleasure and enjoyment.
- The garden plays a role in home-making, particularly through daily routines and activities. Domestic spaces affect self-determination and sense of continuity and choice. Living spaces, including the garden, can reduce isolation.
- Use and enjoyment of the neighbourhood by people with dementia depends on legibility, distinctiveness, accessibility, comfort and safety. Also, a level of complexity and interest, including a social community, that a person can make connections to on a daily basis contributes to a life of quality.
- Not only can gardening and the physical garden space in which this occurs contribute to human well-being and mental health, but nature-based activities and natural places can be purposefully therapeutic, as evidenced in health geography, in social and therapeutic horticulture and in psychotherapy practice. As such, these spaces are considered 'therapeutic landscapes' and have a reputation for achieving physical, mental, and spiritual healing. Mechanisms include a sense of place, psychological rootedness, authentic versus unauthentic environments and tapping into the sensory experience.
- Experiences with community gardening have helped people with mental health needs to overcome social isolation and instability. Being outdoors helps relieve

stress and tension, and satisfies the need to be alone and to be free. Trees, plants and animals are sought after for stress relief.

- Psychotherapeutic methods offer theoretical and practical means to explore, and reflect upon areas of consciousness hidden from our everyday awareness, and gardens and horticulture are becoming more widely used for this.
- Nature involvement is beneficial when accessed by a person independently and also in relationship with another person, in terms of maintaining a sense of place, psychological rootedness, sensory experience, stress relief, social inclusion and stability.
- There is evidence of social, psychological and health benefits for people with dementia from spending time outdoors, the healing power of nature, activities in the garden, animals, multisensory exercise, and the use of nature to explore memories. Benefits were evident in their interaction, initiation, concentration, and activity completion, but there is still the need for empirical evidence.

1.2 STUDY ONE – IMPORTANCE OF NATURE

This section presents the first of three studies in which architecture, nature and dementia care intersect. Study One establishes the importance of nature from the perspective of the person with dementia and highlights the complex environmental interactions determining the potential for such a connection within two residential care environments. In so doing, it addresses the first aim of the thesis, to determine if and why ‘nature’ is enjoyable to people with dementia.

The literature review presented above supported one basic assumption of the thesis, that people enjoyed nature in their lives in many different ways. However, no research existed that had asked people with dementia specifically if and how this is true for them. Two aspects of the person-centred approach will now be discussed. Firstly, the intention was to involve people with dementia directly as participants, and to supplement that with proxy account, rather than supplant it. As one aim of the thesis is ‘to investigate an interaction between people with dementia and nature, facilitated by the built and social environment, and contributing to well-being’, the study must involve the clients directly, as they are the people living in the buildings. Secondly, rather than taking nature as a starting point, the interview schedule was based widely on enjoyment, which

left the scope wide open for people to define that for themselves, rather than presuppose that nature is important to them.

1.2.1 AIM AND RESEARCH QUESTIONS

The aim of Study One was to determine if ‘nature’ is enjoyable to people with dementia. If they identified nature as enjoyable, by what ways and means do they now, or did they then, enjoy nature in their lives? Furthermore, did they perceive a lack of nature in their lives in the care setting where they were currently living? There were three research questions:

- Is nature identified as enjoyable to people with dementia?
- If so, in what ways is it enjoyed?

It was expected that sensory stimulation and nature-related activities would be identified in response to this line of inquiry. Finally, to determine if their needs presently go unmet, the third research question was:

- Do they feel their lives today in residential care lack a connection to nature?

1.2.2 DEFINING AND MEASURING ‘NATURE’ AND ‘CONNECTION TO NATURE’

There is no definition for ‘connection to nature’ in design guidance, although providing for such a connection is often recommended as it contributes to quality of life. It is therefore expected that within Study One a definition of ‘nature’ will emerge from the data. It is expected that the self-reporting of the participants will include at least two aspects. First, a sensory connection will probably be expressed, one in which the body senses natural elements such as sunshine, breeze and fresh air. It is also expected that an active connection will also be expressed in which the person is physically involved through movement with natural elements. For instance, taking a dog for a walk in the park or attending an outdoor sporting event provides a connection to nature through the person’s physical movement. It is expected that at least these two components (sensory and active) will be identified in the data. Once the self-reported importance of ‘nature’

in the lives of people with dementia is gathered in the data from Study One, and a definition has emerged, a method of checking for ‘connection to nature’ can then be developed. These two components – a definition of ‘nature’ and a way to assess one’s connection to it – are essential for the success of Study Two, the aim of which is to develop a tool to assess the potential of residential care environments to provide a ‘connection to nature.’

1.2.3 ROLE OF THE INDEPENDENT PROJECT

While working on his PhD the candidate was hired as a research assistant on the INDEPENDENT project, an EPSRC funded EQUAL 4 consortium project. He was responsible for research involving people with dementia and the potential for assistive technology to create enabling domestic environments. In 2003-2004 he conducted a series of interviews and focus groups to assess the needs of people with dementia and their formal and informal carers. These were carried out in residential care homes with 13 family carers, 10 professional carers, 7 people with dementia as well as 3 people with mild memory loss and confusion still living at home. The topic of the research was quality of life and well-being, in particular enjoyable activities, which included nature-based activities. Study One in this thesis is comprised of a segment of the data the candidate collected during this larger study – the data specific to nature-related topics. Access to the two residential care homes and to the study participants with dementia were enabled through his position on this project. The template for data analysis were developed and used by the consortium team in which he participated. All other methods were developed independently of the larger project.

1.2.4 ETHICS AND CONSENT

Ethics of the research and methods of consent were important as people with dementia are ‘vulnerable,’ and ethics approval is required for research involving vulnerable people. The participants in this thesis research were also involved in the INDEPENDENT Project for which ethics approval was sought and granted through the regional ethics committee (COREC). The care homes themselves were owned by a voluntary care housing provider involved in this larger study. Dementia Voice, an organisation with considerable expertise in the UK in the area of dementia, was a

consortium partner on this larger project and provided consultation and training on research methods and practices, from which this thesis research benefited. Interviews and focus groups were conducted with relatives and professional staff as well as interviews with residents. This data gathering was supplemented by routine observations during site visits to the homes. Photographs were also taken and drawings made of the homes. There was ongoing verbal consent for the research from the residents and their relatives.

Formal permission in the form of ethics approval was also sought through the University following guidelines in the framework on research governance relevant to postgraduate research projects. Research activities within the homes were guided by ethical protocols prescribed by Dementia Voice which address ethical issues of conducting research with people with dementia. Protocols governing consent, ongoing consent, interviews, recruitment, sampling and participation, interview/focus group agendas, recording, transcription, analysis and reporting were laid out in project documents submitted by the candidate and approved by the relevant governmental research ethics committee.

Consent is a critical concern in research with people with cognitive impairment, including dementia. There is an issue as to whether or not such a person can give consent. Arguably one can question whether or not they understand what they are consenting to, and once they have given consent do they remember having done it. To address these areas the ethical protocol for consent was as follows. For focus groups and interviews an information sheet and a consent form designed specifically for people with dementia was used to inform the participants about the research, to offer them the choice to participate and the freedom to withdraw at any time. A written consent form was gained from every participant if possible. In the event they are unable to understand or give consent, proxy consent may be given by their carers. Even after consent has been obtained, during an interview the ethical requirement is to gain ongoing consent which involves periodically reminding the person they are free to withdraw at any point. Data were anonymised and only selected passages were quoted in reports or papers.

1.2.5 METHODS

Study One was a qualitative investigation with people with dementia, family carers and professional carers involving interviews, focus groups and observations in two residential care homes. The total number of participants for the interviews and focus groups was 34, including 10 people with dementia. (Of these, three were day centre clients experiencing memory loss and confusion and still living at home.) Observation was carried out within both care homes during different times of the day over a period of 2 years in order to verify and supplement data gathered during interviews and focus groups, and to more fully understand the use of the built environment by those who lived, worked and visited there. Twenty people with dementia were observed living in the homes. The total number of participants in Study One is therefore (N = 47). The Participant Map for Study One appears in Figure 1.2

The choice of research methods was made to facilitate the intended use of the findings, namely an architectural response at the intersection of care practice and building design, as stated in the introduction. Researching human-environment interactions is a step towards an ecological model of care, one that is ‘responsive to the unique interplay of each person and the environment (Reimer et al., 2004). To gain a depth of understanding about this ‘unique interplay of person and environment,’ observational methods were chosen. The following section will discuss observational research, the case study approach and unstructured observation as it related to Studies One and Two.

1.2.5.1 OBSERVATIONAL RESEARCH - and the Case Study approach

Drawing upon literature on qualitative research, Lawton, for instance suggests that ‘direct qualitative observation of people using environments was the original method of choice in studying environment and behaviour...’ (Lawton, 2001). To capture as rich a picture of daily life as possible, and to check the reliability of the qualitative data, observations were also carried out over an extended period of time in both homes.

‘Case study’ is a term used to refer to a number of different approaches, but generally it refers to research that studies a small number of cases in considerable depth – ‘large

amounts of information are collected about one or a few cases, across a wide range of features' (Hammersley, 2004, p. 92). The case study approach was adopted to gain insight into residential dementia care living environments. The research was conducted in two care homes over a 3 year period using mixed-methods. Years one and two were designed to gain an in-depth understanding of the day to day life of residents as it regularly occurred in the homes - 'describing and/or explaining what is going on in a particular situation for its own sake' (Hammersley, 2004, p. 93). In the case studies, as opposed to using an observation schedule which collects systematic and reliable data for use in analysis, observations were recorded briefly in a notebook or verbally on a digital recorder during site visits to the homes and later expanded into fieldnotes in a journal. Use of observation contributes to the triangulation of data collection methods, thereby enhancing its reliability (Angrosino, 2004, p. 755).

One advantage of the case study approach in this context of interaction in living environments is the ability of the data to capture processes over time as opposed to the snapshots provided by survey methods. A further advantage is that, 'case study research can investigate causal processes "in the real world" rather than in artificial settings' (Hammersley, 2004, p. 93). These advantages make case study a logical method with which to investigate the care home - a 'real world' in which interactions occur gradually over time.

On the authenticity or authority of case study research, it is sometimes claimed that case study can

'amplify the unique voices of those whose experience in, as well as perspective on, the world often go unheard. However, questions have been raised about this position, not just by those committed to a scientific approach ...but also by some constructionists and postmodernists. The latter's arguments undermine the notion of authenticity by denying the existence of any real phenomenon that is independent of investigations of it, by questioning the legitimacy of researchers speaking on behalf of (or even acting as mediators for) others, and/or by challenging the idea that people have unitary perspectives that are available for case study description.' (Hammersley, 2004, p. 94)

Nevertheless, the case study approach is being found to be 'of considerable value,' even though 'it raises some fundamental methodological issues' (Hammersley, 2004, p. 94).

Observational research

‘The purpose of observational research is to record group activities, conversations, and interactions as they happen and to ascertain the meanings of such events to participants (Angrosino, p. 754.).

‘Observation is a data collection strategy involving the systematic collection and examination of verbal and nonverbal behaviours as they occur in a variety of contexts...when there are difficulties in obtaining relevant information through self-report because subjects are unable to communicate...or provide sufficiently detailed information...about complex interaction patterns. Observations also are used to validate or extend data obtained using other data collection methods’ (Bottorff, 2004, p. 752).

The majority of data collected during Study One was from visits twice a month to each home for six months to observe daily life. This was done in written and recorded form consisting of narrative depictions of physical settings, actions, interaction patterns, meanings and expressions of emotion (Angrosino, p. 753). The researcher’s role is:

- (a) ‘to see events through the eyes of the people being studied,
- (b) to attend to seemingly mundane details...,
- (c) to contextualise observed data in the widest possible social and historical frame...,
- (d) to attain maximum flexibility of research design..., and
- (e) to construct theories of explanatory frameworks only after careful analysis of objectively recorded data’ (Angrosino, p. 753).

Observational research is classified by the degree of involvement of the researcher in the setting – what is the relationship between the researcher and the people being observed? Initially, the role of the researcher at the beginning of Study One can be classified as that of a participant observer (as opposed to non-participant observer or video recordings). Participant observation involves:

‘sustained direct observations by the researcher and focuses on the context as well as the behaviors of individuals to understand the meaning of certain behaviors or beliefs...linked with ethnography...it is a useful method to study privacy in nursing home settings. ...The advantages of in-person observation are that (a) over time, participants accommodate to the presence of the researcher, increasing the likelihood of the possibility of observing the phenomena of interest as it really occurs; (b) the researcher has the opportunity to interact with participants to clarify and extend observations; (c) events can be understood as they unfold in everyday life; and (d) differences between what participants say and do can be made apparent’ (Bottorff, 2004, p. 752-3), from (Bogdewic, 1999).

The participant observer role allows for varying degrees of involvement with others in the setting, which is directly connected to the degree of objectivity desired: a) the complete participant, or insider; b) the participant-as-observer; c) the observer-as-participant; and d) the complete observer (Angrosino, 2004, p. 754).

Observation

‘The way people move, dress, interact and use space is very much a part of how particular social settings are constructed’ (Mulhall, 2003, p. 307). Observation, what some have called ‘the most penetrating of strategies’ (Lofland, 1971, p. 93), is ‘the key method for collecting data about such matters’ (Mulhall, 2003, p. 307). Observation can be either structured or unstructured (Pretzlik 1994), differing in purpose and paradigm:

‘In positivistic research structured observation is a discrete activity whose purpose is to record physical and verbal behaviour. Observation schedules are predetermined using taxonomies developed from known theory. In contrast, unstructured observation is used to understand and interpret cultural behaviour. It is based within the interpretist/constructivist paradigm that acknowledges the importance of context...’ (Mulhall, 2003, p. 306).

The two types of observation differ methodologically:

‘Observation within the naturalistic paradigm is not unstructured in the sense that it is unsystematic or sloppy. It does not, however, follow the approach of strictly checking a list of predetermined behaviours such as would occur in

structured observation. Instead, observers using unstructured methods usually enter 'the field' with no predetermined notions as to the discrete behaviours that they might observe.' (ibid., p. 307)

Two characteristics of observation with specific relevance to the thesis research are 1) its ability to gain sufficient attention to the context, place or setting of the interaction - to inform 'about the influence of the physical environment,' and 2) 'to provide evidence for process – something that is continually moving and evolving' (ibid., p. 308).

Mulhall states that field notes (Sanjek 1990, Emerson et al. 1995) are central to observational studies (Mulhall, 2003, p. 310) and that 'the nature of participant observation and the difficulties in writing conspire to ensure that field notes are messy, loose texts that make no claim to be final or fixed versions' (p. 311). She gives seven types of field notes:

1. Structural and organizational features (buildings and environment)
2. People (behaviour, interactions, dress, movement)
3. The daily process of activities
4. Special events
5. Dialogue
6. An everyday diary of events (chronological)
7. A personal/reflective diary (thoughts and reflections) (p. 311)

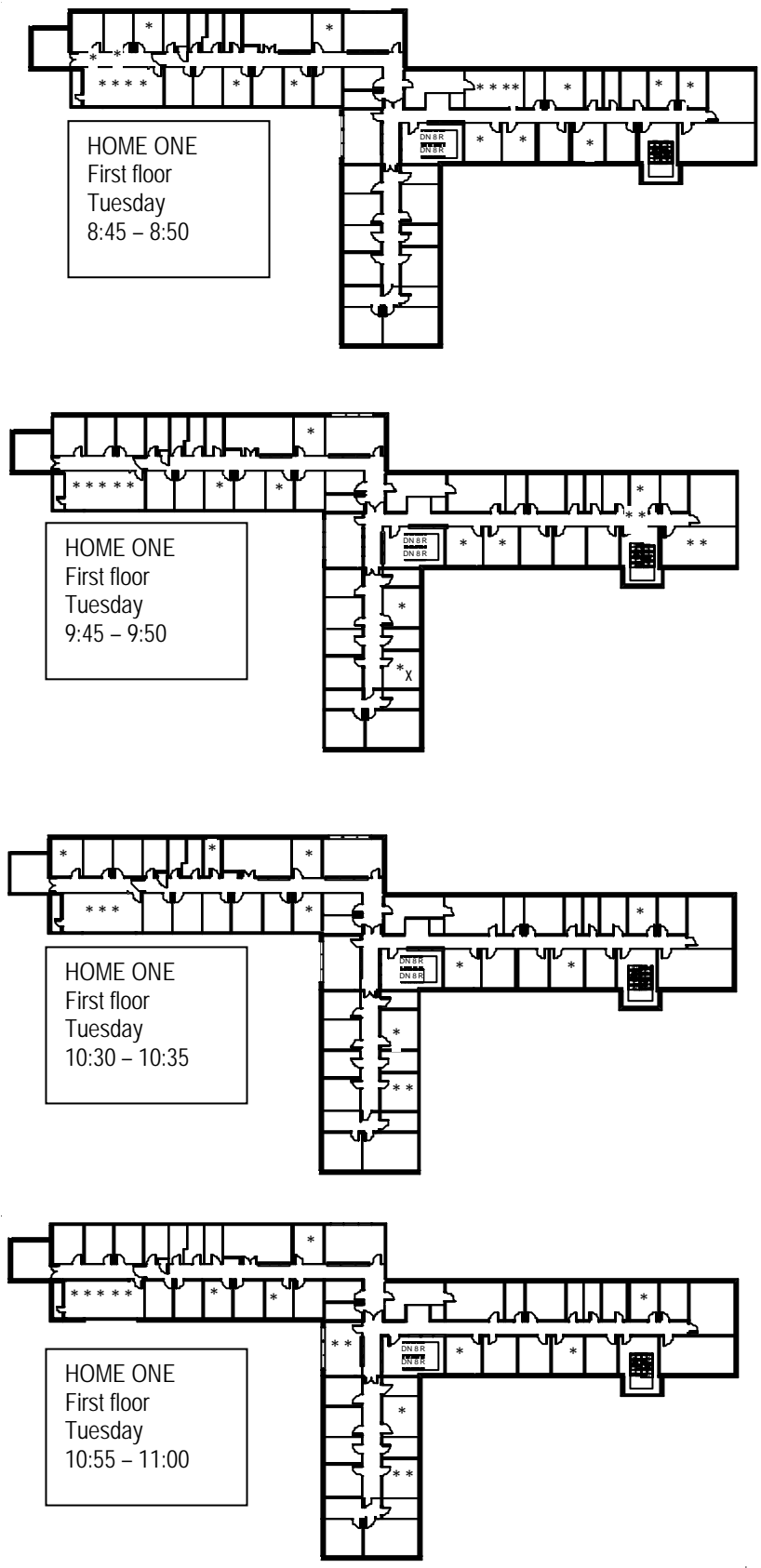
Capturing dialogue and actions in the field is challenging (Emerson, 1995) but proved particularly insightful, especially within the context of the built environment. Although not many studies have investigated the home environments of people with dementia, a few have used observational methods. In a study by Briggs and colleagues (2003) on accomplishing care at home of people with dementia, the study was designed 'to interview a small sample of carers and their relatives and to spend up to 12 hours observing them in the home of the person with dementia as the process of caring and being cared for was enacted' (p. 270). The researchers 'used neither standardized interview schedule nor observational recording schedule. Rather, certain topic areas were distinguished and people were encouraged to talk about them in the interviews.

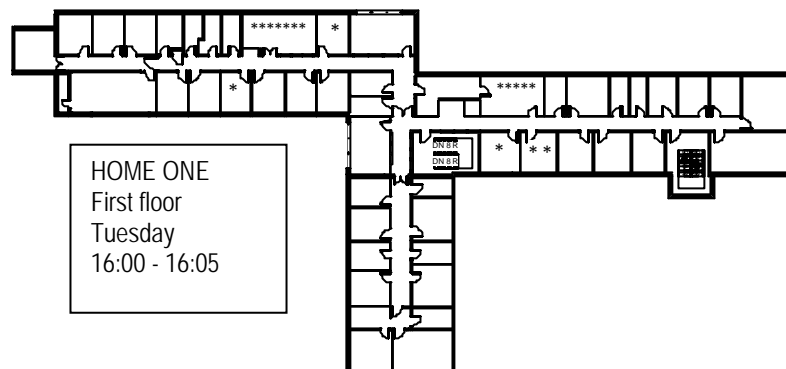
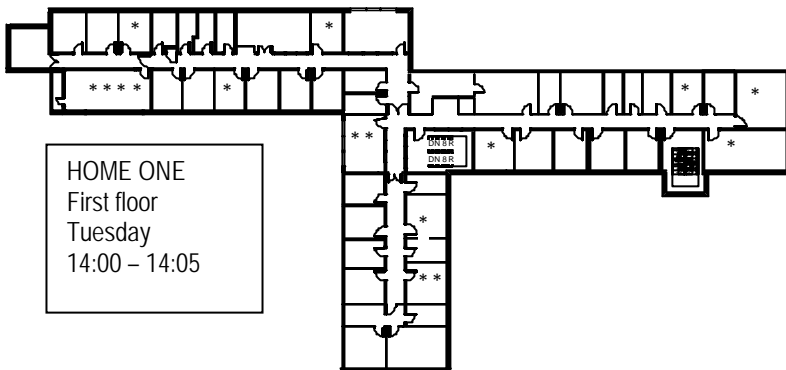
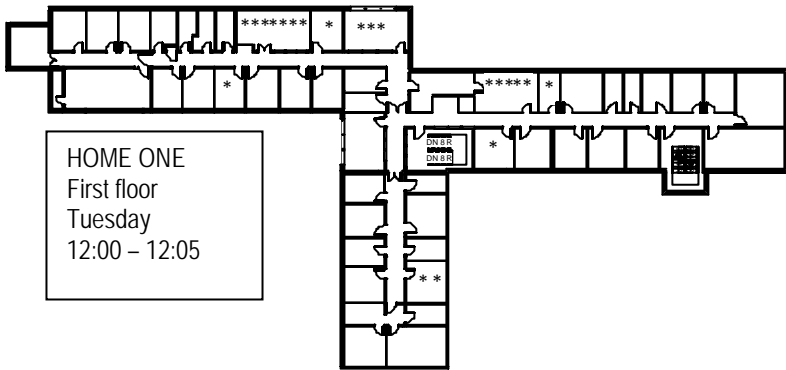
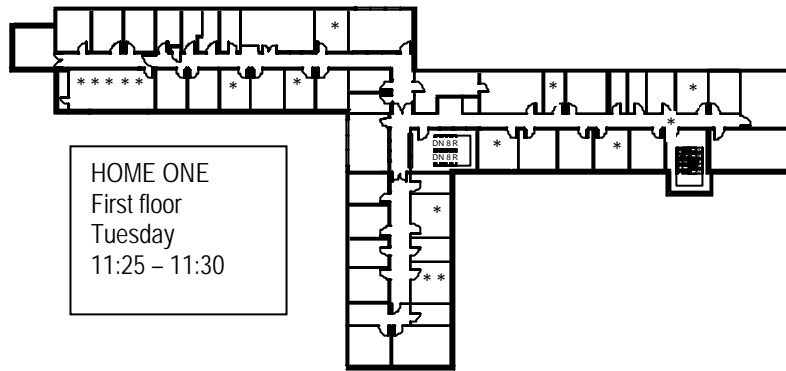
Mapping (structured - two types) and field notes (unstructured) were the two main types of observational tools used during Studies One and Two. Each are described below:

1. Mapping (structured):

- A. Room occupancy - patterns of space use tracked through time

Fig. 1.1 Time-space geography map (Hägerstrand, 1967)
 Example: 1st Floor room occupancy - Home One, Tuesday.
 (*) represent locations of the residents





The floor plans above are a sampling of maps from the total collection of maps annotated in one day at Home One. As field work in the home was carried out over various shifts and days of the week, including weekends, a multi-layered understanding of the life of the two homes was constructed as a time sequence of movement through spaces. The data shown above were initially notated by hand on paper plans giving

exact locations of persons within the room, including notes about staff and visitor positions and movement of people within corridors.

Mapping of all residents and staff and family carers was undertaken periodically within the two years of observation. It was a key component of the observational method as it gave insight and details about:

- daily patterns and routines of the home (meals, sleep/wake, care/hygiene)
- individual's abilities and needs (mobility, human contact, privacy)
- individual's perceptions (of where they are, why and for how long)
- personal preferences (views to outside or inside activities, view content)
- reasons for seating patterns in lounges and dining rooms
- physical features of lounges, bedrooms, corridors and furniture
- care giving interactions (quality, length and reason)
- individuals' normal and unique characteristics and behaviours
- animals, wildlife and going outside
- preferences, advantages and limitations of rooms and spaces in the building

B. The second structured observational method used in the research was Dementia Care Mapping, including both the behavioural codes and the well-being or ill-being (WIB) scores. (The candidate completed the DCM training course in early 2003 in Bradford). This was used most often in lounges to better understand the reaction of the residents to stimulation from staff, relative's visits, television, views to outdoor activity and interactions between residents.

2. Field notes (unstructured):

The taking of field notes included notating conversations as they occurred; notating the behaviour and actions of people; audio taping verbal exchanges; photographing interactions between people, other people and the building; keeping track of the time things happened and making notes about the environment. Field notes were able to explore and inform about multiple aspects of day to day life, such as:

Time – sequences, durations, daily patterns and routines

People – behaviour, actions and interactions, mobility and illness, care needs

Animals – appearance of pets and wildlife

Sounds - dialogue, monologue, noise, technology, media (TV, radio, CD)
Body language - gestures, touching and non-verbal communication
Movement - within rooms, between rooms and between indoors and outdoors
Atmosphere - weather, light levels, patterns of daylight, sun and shade
Climate - microclimate, thermal comfort, smell, air quality
Building usage – windows and doors; openings and levels of use

Two forms of structured mapping alongside unstructured field notes constituted the observational component of Studies One and Two. There is growing interest in observational methods in dementia research, due in part to the disability of the illness being partly environmental (Gilleard, 1984; Marshall, 1997) and responding to environmental interventions (Calkins, 2001; Day et al., 2000; Teresi et al., 2000). Research has shown that ‘observation is not only possible but, when combined with conversational interviewing, essential for understanding the processes of caring and what it means to live with dementia’ (Briggs, et al., 2003, p. 268).

Ethnography

Ethnography is the branch of anthropology that deals with the scientific description of specific human cultures. Ethnographers immerse themselves in the lives of other people to accurately interpret people’s behaviour and to place into context the data they collect (Fetterman, 2004). This cultural interpretation has been termed ‘thick description’ (Geertz, 1975) and to capture it requires fieldwork, one of the most characteristic features of ethnography. ‘Participant observation characterises most ethnographic work and is crucial to effective fieldwork....combines participation in the lives of people under study with maintenance of a professional distance that allows adequate observation and recording of data’ (Fetterman, 2004, p. 328). Besides fieldwork and participant observation, ethnographic tools also include interviews, surveys and unobtrusive measures.

Generalisability

On the issue of generalisability, ‘in some case study work, the aim is to draw, or to provide a basis for drawing, conclusions about some general type of phenomenon or about members of a wider population of cases’ (Hammersley, 2004, p. 93), although if and how this is possible is widely debated (Gomm et al., 2000). While the conclusions

will not be generalisable to all care homes or all people with dementia, it is probably arguable that the problems identified during the case study will not be unique to these homes and rooms or to these participants due to the commonalities inherent in this model of care. It may also be said that while the characteristics of the people with dementia are different and the disease affects everyone differently, they do share common difficulties in terms of use and comprehension of their space.

Objectivity

In terms of objectivity desired, the case study research attempted two slightly conflicting aims. One aim was to 'give voice' to the people with dementia which reflects the overall user-led approach to the research project. A second aim was to produce an account from 'an external or research point of view' (Hammersley, 2004, p. 92). To accomplish both aims was an important goal because participants sometimes had diverse perspectives. For instance, proxy accounts by relatives sometimes differed from that of the person with dementia themselves. Specifically, in terms of involvement with nature, the person with dementia often felt they still participated in cherished outdoor activities when observation and interviews with care staff and family members confirmed objectively that this was not the case. Furthermore, the presence of the researcher within the setting 'can affect the activities and settings under observation' (Angrosino, 2004, p. 754). To minimise the effects of observer bias, 'standards of objective data collection and analysis' must be adhered to (ibid. p. 754). In order to achieve both aims of giving voice as well as giving an account from a research point of view, a particular role was chosen at the beginning of the research which was appropriate to the living environment and which gave a desired degree of scientific objectivity. The role of complete observer was desired and pursued at the onset of Study One: 'a researcher without ties to the people or setting being observed who conducts his or her observations unobtrusively, with a minimal amount of interaction with those being observed' (ibid. p. 754).

It was unrealistic to expect that this stance would be maintained for the duration of the three year Independent Project. To begin with, the requirement for informed consent meant that the researcher engaged the participant with the details of the research project, their role in it, why they've been chosen to participate, why their voice mattered and what they could expect out of it. Also, because mixed methods were used, including

interviews with the residents and families as well as functional and cognitive assessment scales, the researcher spent at least an hour with each resident (more with interview participants) engaging them in conversation, discussing personal aspects of their lives and gaining their confidence.

During this process, the participants drew the researcher into their lives. Although never becoming a participant in the sense of living in the home, the role of ‘complete observer’ shifted in the course of the research to be somewhat closer to ‘observer-as-participant (an outsider who becomes a member of the community)’ (ibid. p. 754). The participants enabled this shift as they drew the researcher into their social net. This drawing in was made possible in part by their dementia, often thinking he was either a relative or a gentleman caller, and therefore acting towards him in appropriately familiar ways. Examples of this include: offering to put his bag safely into their room; asking if he has had his tea yet; winking, flirting and touching; saying ‘I love you’, mentioning people in conversation as if he would know who they were talking about, because they believe him to be a relation. The staff and family carers likewise drew the researcher into their social net by sharing family information, laughs, problems and anecdotes.

Because of this compromise of ‘complete objectivity’ by informed consent and familiarity over time, the researcher’s role must now be discussed in terms of degrees of membership (ibid. p. 754), the appropriate one for the case studies being ‘peripheral member researchers who develop an insider’s perspective without participating in activities constituting the core of group membership’ (ibid. p. 754). Furthermore, the expectation for objectively rendered rigorous results has given way to ‘records of encounters between specific researchers and specific subjects at specific points in time’ (ibid. p. 754).

Related to objectivity and membership is the issue of observer bias which ‘may arise out of unconscious assumptions or preconceptions harboured by the researcher. In some cases, these preconceptions take the form of ethnocentrism – the unreflective acceptance of the values, attitudes, and practices of one’s own culture as somehow normative, leading to an inability to see, let alone to understand, behaviours that do not conform to that norm’ (Angrosino, 2004, p. 757). Two ways to mitigate observer bias, the use of gatekeepers and the method of triangulation, were used during the field work.

‘Traditional cultural anthropology was based on the establishment of long-term relationships in a study community so that, in effect, the members of the community would forget that they were in fact being observed by someone who had ceased to be a stranger’ (Angrosino, 2004, p. 758). To mitigate observer effect in short-term research such as this, ‘the researcher can enhance the level of comfort and trust in the study population by being introduced to the community by someone who already is respected by that group’ (p. 758). Having worked as a care assistant, the researcher was able to strike a rapport with the care staff in both of the homes. Once staff knew the researcher was not there to watch how well they did their jobs, and actually was qualified and did similar work, they were more at ease and accepting of his presence. The care staff acted as gatekeepers to residents, dissolving the potential for observer bias that may have arisen. The other factor that mitigated against observer bias was the triangulation of study methods, whereby ‘the collection of impressions gleaned from observation’ were compared with data from, for instance interviews (p. 758). Another aspect with the potential to bias the results of observation needs disclosure here. Similar to the Hawthorne effect (Jones, 1992; or overemphasised, see Mulhall, 2003) in which an increase in worker productivity resulted by the psychological stimulus of being singled out and made to feel important, the researcher’s personal demeanour, gender, effective communication skills and friendly manner may have affected the responses from study participants. It is possible that aspects of the researcher’s presentation biased the results by contributing to a higher level of willingness and participation during the research than if the researcher had been somebody else. This factor was mitigated against by not over-weighting when reporting results.

1.2.5.2 INTERVIEWS AND FOCUS GROUPS

To understand the subjective experience of people with dementia and their carers a qualitative methodology was chosen using grounded theory for content analysis. Semi-structured interviews were conducted with people with dementia (N=10). Seven were living in either of the two residential care homes and three were still living at home and visited the day centre regularly. Focus groups were conducted with formal and informal carers (N=10 formal carers; N=13 informal carers) in the two care homes on the general topic of quality of life. Focus groups were carried out by seating three to five people around a table with a tape recorder in the middle. An interview schedule focused the

discussions around quality of life issues, and ‘probes’ were used to gain a deeper understanding of the topics. Interviews and focus groups were audio-taped and transcribed.

Grounded theory

When conducting qualitative research where the intention is aimed towards theory development, grounded theory provides a set of systematic inductive methods – both a method ‘consisting of flexible methodological strategies and ... the products of this type of inquiry’ (Charmaz, 2004, p. 440). Benefits to this approach include a ‘flexible yet systematic mode of inquiry, directed but open-ended analysis, and imaginative theorizing from empirical data’ (ibid., p. 441). Grounded theory was first stated by Glaser and Strauss (1967) in *The Discovery of Grounded Theory* as a way ‘to move qualitative inquiry beyond descriptive studies into the realm of explanatory theoretical frameworks, thereby providing abstract, conceptual understanding of the studied phenomena’ (ibid. p. 441). The definitive method was to later appear in *Theoretical Sensitivity* (Glaser, 1978).

Following Glaser's approach to grounded theory beginning with Strauss (1967) and continuing after the new direction taken by Strauss and Corbin (1990), the analytical strategy involves studying basic social processes, using comparative methods and constructing abstract relationships between theoretical categories. The strategy began with two phases of coding - open and focused. Each line of the transcribed text was coded by asking *what is happening here?* The aim of this step was to identify the phases, preconditions, properties and purposes of the action, rather than to merely describe it (Charmaz, 2004, p. 442). In this first step connections are made between data in order to come to grips with the *process* being studied as opposed to the topic. Initial coding was followed by focused (or selective) coding which generated categories or themes based on the most frequent or the most incisive codes. Next, the descriptive material was moved into 'memos' which helped define the fundamental aspects of the participants' worlds. Memos were in narrative form and contained descriptive material from the interviews. Memo writing helped to define the theoretical categories which were emerging. Theoretical sampling was then carried out by accessing participants in the other home in order to fill gaps and to clarify conditions under which the emerging categories or themes held. A discussion as to how the grounded theory analysis complemented the observational analysis appears below.

Grounded theory in dementia research

Grounded theory is a particularly appropriate method for revealing the underlying processes of a space. Its use in research with people with dementia is appropriate for such investigations because it is ideally suited for 'gathering rich data about specific processes rather than the general structure of one social setting' (Charmaz, 2004, p. 442). By so doing it can 'provide a telling explanation of the studied phenomena from which other researchers may deduce hypotheses' (ibid.). Some examples of the use of grounded theory in dementia research can be found in the area of early-onset dementia.

Werezak and Stewart (2002) used a qualitative approach and grounded theory in a study exploring the process of learning to live with early-stage dementia, which led to the development of a preliminary theoretical framework. Harris (2002) used grounded theory to identify eight themes around the experience of living and coping with dementia at a younger age. She interviewed 23 people ranging in age from 43 to 68 and

went on to propose practice guidelines related to early on-set dementia. She found this methodology appropriate because:

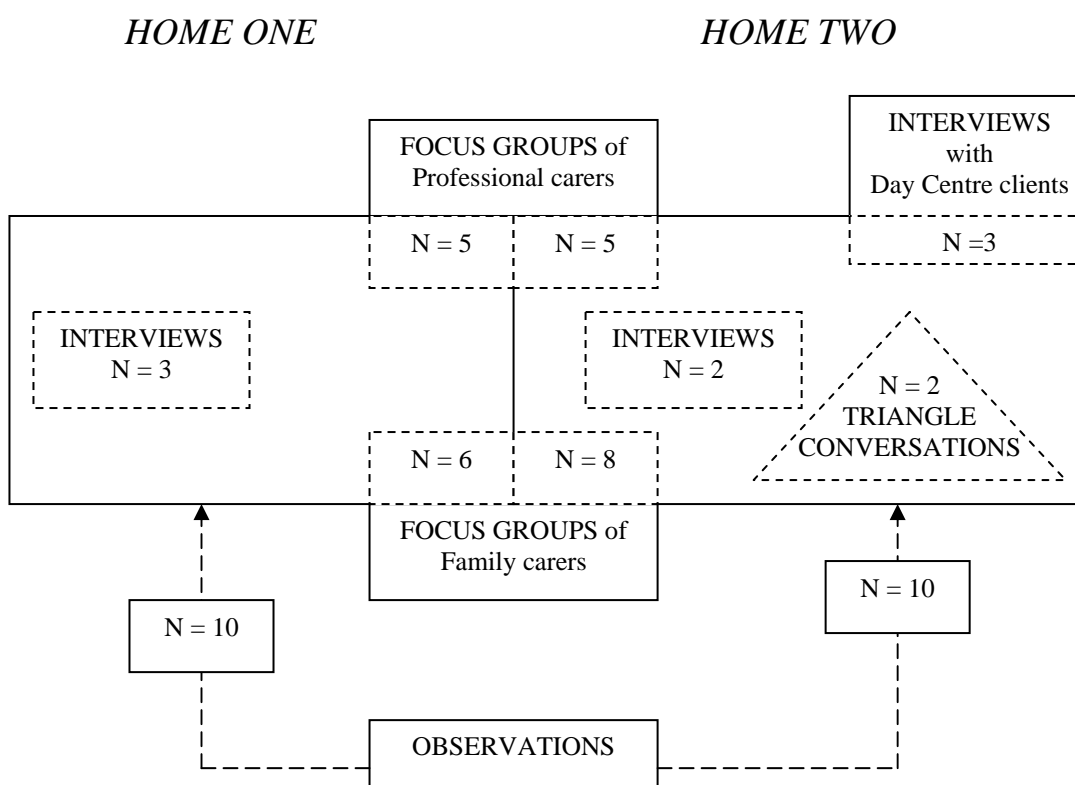
‘...qualitative research makes no claim to be representative of the population it is examining. The purpose of this methodology is to present a more in-depth, diverse, and complex picture of a phenomenon that has been previously reported, and identify possible variables that need to be tested and confirmed in larger representative studies.’ (Harris, 2002, p. 8)

Harman and Clare (2006) conducted semi-structured interviews with nine people who had a diagnosis of early-stage dementia to explore illness representations and how these related to daily lived experience. The researchers took an existing model of illness behaviour, the self-regulation model, to identify how it may be used to assist in illuminating the experience of developing dementia. Considering the two main themes that emerged, they proposed ‘a preliminary model of the way in which illness representations contribute to the lived experience of early-stage dementia.’ The study design was as follows:

‘We subjected transcripts of interviews to interpretative phenomenological analysis (IPA; Smith, Jarman, & Osborn, 1999) to develop an exploratory group-level thematic account presenting the key elements of participants’ understanding and experience. In a secondary stage of analysis, we undertook a separate theory-driven content analysis to identify all instances of the components of the SRM within each participant’s account.’ (Harman and Clare, 2006, p. 487)

The use of this methodology to research early on-set dementia is not surprising. It has been argued that ‘people with dementia have usually been excluded from or marginalised in studies about dementia because of traditional assumptions about the ability or appropriateness of people with dementia to act as participants or respondents’ (Bond and Corner, 2001, p. 95). The challenges would seem to lie in research with people in later stages of the disease. But it is argued that ‘there are no unique methodological challenges in researching dementia. Rather, the complex nature of dementia and dementia care highlight the methodological challenges of investigating complex social phenomena.’ Furthermore, ‘the choice of research method should be driven by theory and not by ideological or political prescription. Theory-driven pluralistic approaches to method will facilitate participation of people with dementia in research through the valuing of personhood’ (ibid.).

Figure 1.2 Participant Map for Study One (N = 47)



Participants Observed	Participants Interviewed	Focus Group Participants	Sum
10 [3 interviews from this cohort] 10 [4 interviews from this cohort]	[3 Home One] [2 Home Two] [2 Triangle conversations] 3 Day Centre clients	10 Professional carers 14 Family carers	
20	3	24	47

Study Sample

Overall in Study One 20 people with dementia were observed living in the two care homes over a two year period. Few residents had a medical diagnosis of dementia, according to their files. Eight out of the twenty people had mobility problems requiring a stick or a frame. Five had sensory impairment including vision or hearing problems. Physical and sensory disability was more prevalent in Home One. Of the ten people with dementia interviewed, 7 were living in one of the care homes and 3 were day centre clients. One person had a diagnosis by her general practitioner of moderate AZD. Four had 'mild memory loss' and five had 'mild to moderate' dementia, according to notes in their care plan or discussions with their family carer or the care home manager. Day centre clients were experiencing mild memory loss and confusion and were still living at home. The median age at the time of the study was 82 and the range was from 71 to 88 years. One participant was male. One woman was Caribbean, the rest were

Caucasian. Three interviews had a family carer present but in only one of these did the carer participate. Two of the interviews were conducted with another resident present in what will be discussed later as a ‘triangle conversation.’

For the focus group samples, of the formal carers (N= 10) there were five from each care home, all female. Their years of professional care-giving experience ranged from 1 to 30 with the average being 9.7 years. Of the informal carers (N=13) four were male. Two had cared for spouses who had since died and eleven were caring for a brother, mother or mother-in-law in one of the homes. The participants constituted a convenience sample, determined by the care home managers and team leaders according to who they thought would be willing, interested and able to participate. All interviews and focus groups were conducted on site in the two homes. All participants of interviews and focus groups were Caucasian.

Interview Schedule

The interview schedule was slightly different for the three types of participants – people with dementia, family and professional carers. It was basically in three parts as outlined here with numerous topical elaborations and prompts which are not shown below.

1. QUALITY OF LIFE

What do they enjoy...what brightens them up? Favourite or preferred: ACTIVITIES (mental, physical, creative, spiritual), PLACES, INTERACTIONS, TIMES etc.

2. CHALLENGES OF DAILY LIVING

A. Professional Carers: Walk through the tasks in order of the day from waking to going to sleep and address the domains below as they concern: Dressing, Bathing, Meals, Socialising, etc
OR

A. Informal & Family Carers: What precipitated a move into care for your relative? What sorts of difficulties were they experiencing at home? Address the domains below as they concern: Dressing, Bathing, Meals, Socialising, etc.

Domains: INDEPENDENCE, CONTROL and CHOICE, COMMUNICATION, COMFORT, MOBILITY, PRIVACY, SENSORY STIMULATION and AWARENESS of the OUTDOOR WOR

B. Problem Scenarios

3. WISH LIST – What would improve quality of life for them and for you?

1.2.5.3 ECOLOGICAL AND INTERACTIVIST APPROACHES

Nature-related responses from the transcript data were further categorised according to an interactivist approach. Described by James Gibson, an interactivist approach is based on the bodily process by which we obtain sensory stimulation (Gibson, 1986). This way of categorising interaction is relevant to people with dementia because over the course

of the condition, people with dementia suffer a gradual decline in their ability to move about within their environment. People in late stages of the disease spend large amounts of their time curled up in a chair being wheeled between rooms for sleeping and eating. As the disease progresses and their ability to verbally communicate declines along with their physical ability to move about unaided, a person becomes more ‘acted upon’ by the environment rather than playing a role as an ‘actor’ in the environment. Therefore, sensory stimuli, which they at this point are unable to moderate or control, determine the levels and quality of environmental perception.

The interactivist approach specifies two manners of gaining stimulation. One way of obtaining stimulation occurs through activity and involves moving the body in a performatory manner and results in behaviour. To move the body in an exploratory manner one uses their sense organs to pick up sensory information from their environment. If a person is passive and cannot accomplish performatory actions their sensory stimulation is limited to that which is imposed upon them by their environment. As one’s ability to be physically active declines in dementia, one’s ability to obtain stimulation through activity also declines. Therefore, sensory stimuli is imposed rather than obtained.

The design of an environment for dementia care must address this decline and subsequent alteration in the ways the person receives stimulation. This is especially relevant concerning contact to the natural world, as the building ‘imposes stimulation’ when the resident is no longer physically active and cannot for instance go outside or move closer to or away from a window or door. Table 1.1 summarises the process of receiving stimulation according to Gibson’s interactivist approach.

Table 1.1 The Process of Receiving Stimulation – an Interactivist Approach (Gibson, 1968, p. 32)			
Components of stimulus input	Two ways to modify the stimulus input		Result
Imposed stimulation (forced on a passive observer)	Exploratory (investigative)	Moving the ‘sensory’ organs of the body	Accomplishes the pick up of stimulus information
Obtained stimulation (occurs through activity)	Performatory (executive)	Moving the ‘motor’ organs of the body	Accomplishes behaviour

Based on this approach whereby a person’s interaction with their environment is considered to be key to the stimulation they receive, the transcript data were analysed along a continuum of interaction, ranging from the person being acted upon (for example receiving bodily care and simply ‘being’) to moving about (doing things on their own and with others) through to being very active in their environment (house-keeping and going out). These are termed ‘input domains’ and are summarised in Table 1.2. This way of organising interaction beginning with the person’s own body and then progressing outwards into increasing levels of interaction with other people and the larger environment, is a person-centred approach to analysing the data because it looks at stimulation from the person’s perspective. But also, when considering the design of environments, it is necessary to consider the range of personal abilities of people in different stages of the disease. For a building which provides housing for people in various stages of dementia in the same location, the environment must be designed for both the stimulation it imposes upon a passive individual as well as the sensory affordances available to the active person, plus the gradations in-between.

Table 1.2. Input Domains for classifying transcript data based on an interactivist approach. Domains move from sensation (receiving stimuli) to interaction (behaving within one’s environment)	
1.0 Body – physical needs & care	4. 0 Doing (with others – people or animals)
2.0 Being & Moving	5.0 Housekeeping & Homemaking
3.0 Doing (by myself – with stimuli)	6.0 Going out

Once nature-based enjoyment had been identified as a popular theme, an ecological analysis was carried out, based on the work of two contributors to the fields of older people and dementia. Concerning environmental fit and the role of an older person’s environment in their wellbeing, the work of the late M. Powell Lawton is instrumental. His ecological model of ageing is one in which behaviour is seen as a function of competence in dealing with demands from the environment (Lawton, 1975). Also, control of one’s immediate environment means both knowing it well and maximising the possibility of determining how the space is used (Lawton, 1985). Taking this approach the activity and the total living environment were observed in order to gain a clear picture of the factors enabling or challenging a person’s nature-related activities.

In this framework, the person within their context determines what activities are possible, the success of which determines the kind of experience the person has, and how meaningful their life is as a result. Well-being therefore depends on the context of

the person, and the extent to which personal, social, physical, technological, cultural and spiritual factors enable or challenge their success in meaningful activities. The template below (Fig.1.2), developed within the INDEPENDENT project, shows the method of data analysis employed in Study One. Although there is some debate about beginning with a theory rather than letting it emerge from the study data, this was the approach taken in the project. The aims of the Independent Project included the development and implementation of technology within the time frame allowed. This required a theoretical framework to be developed based on the literature and the expertise within the project team. This framework was therefore used to analyse data from Study One.

Figure 1.3 Data analysis template (Torrington, 2005)

Data analysis template

	Personal Factors	Formal Support Network	Social Network	Physical Environment & Technology	Cultural & Spiritual Aspects
Activity	<i>Enabling factors</i>				
	<i>Challenging factors</i>				

Site surveys

Site surveys were also made of the facilities including buildings, landscape, site and general location. To facilitate site surveys, drawing plans of the buildings were obtained and CAD files were generated in Vectorworks (software license purchased and number available upon request). Landscape elements such as outdoor areas and available habitat as well as general site location (neighbourhood, rural, urban) were surveyed by hand during site visits and the information added in layers to the CAD files.

To summarise, the mixed methodology for Study One includes observations, interviews, focus groups and building surveys, with data analysis accomplished through:

- Qualitative grounded theory analysis of interviews and focus groups

- Interactivist approach according to social, geographical and factual domains as well as a gradation from stimulation to interaction
- Analysis of individual activities in terms of enabling or challenging factors by using a data analysis template
- Analysis of structured and unstructured observational data

The researcher spent a large amount of time familiarising himself with dementia care environments over the last 5 years which contributed to the depth of understanding evidenced in the observational findings of the thesis. The extent of his dementia-related involvement is outlined below as it in many ways has contributed to his overall understanding of these environments and the needs of people living within them.

Field work contributing to the observational component of the thesis research:

1. Visits to dementia care facilities not in the thesis (Average visit – 1.5 hours):

30 Homes in the UK

13 Homes abroad - 5 Norway, 2 Sweden, 6 US

Involvement during visits

discussions with staff and management, touring the facilities

visiting residents

photographing, note taking, sourcing printed documents and floor plans

occasionally meals or other activities with the residents

Professional landscape architecture involvement in the homes

Specialist DCU for 40 people with dementia –

Produced a user needs evaluation, design proposal and a landscape plan

Directed student volunteers on planting day

2. Visits to homes in Study Two - **12** homes in the UK and **2** in Norway

Involvement during visits

Photographing the built environment

Collecting floor plans and operational information about the buildings

Developing CAD drawings from floor plans

Social interaction with the residents

3. Visits to homes in Study One and Study Three - **2** homes in the UK

Involvement during visits

Photographing the built environment and the residents using it

Sourcing floor plans and printed information

Measuring rooms, corridors, door widths, distances to outside, etc

Sketching and drawing living spaces such as lounges and bedrooms

Taking notes

Interacting socially with the residents

Discussing with professional and family carers

Other tasks specific to the Independent Project

Using a Design Matrix to assess the proposed use of technology

Installing technology devices in common areas and bedrooms

Technology feedback sessions with residents and carers

Technology intervention case studies

Tape recording and video filming

- Small-scale experimental interventions (i.e. webcam interface)
- Developing CAD drawings from floor plans
- Dementia Care Mapping
- Presentations to relatives' to discuss project work and gain feedback
- 4. Visits to people with dementia living in their own homes for the Independent Project
 - Project related involvement during visits
 - Interviewing people with dementia and family carer
 - Informal/volunteer projects undertaken
 - Snoezelen room, Family kitchen and Greenhouse
 - Family carer for mother (moderate AZD) – Visits and phone calls
- 5. Paid shift work as a care assistant
 - Wrote up extensive field notes during breaks and after each shift

Figure 1.4 Example of detailed sketch of a kitchenette in Home Two

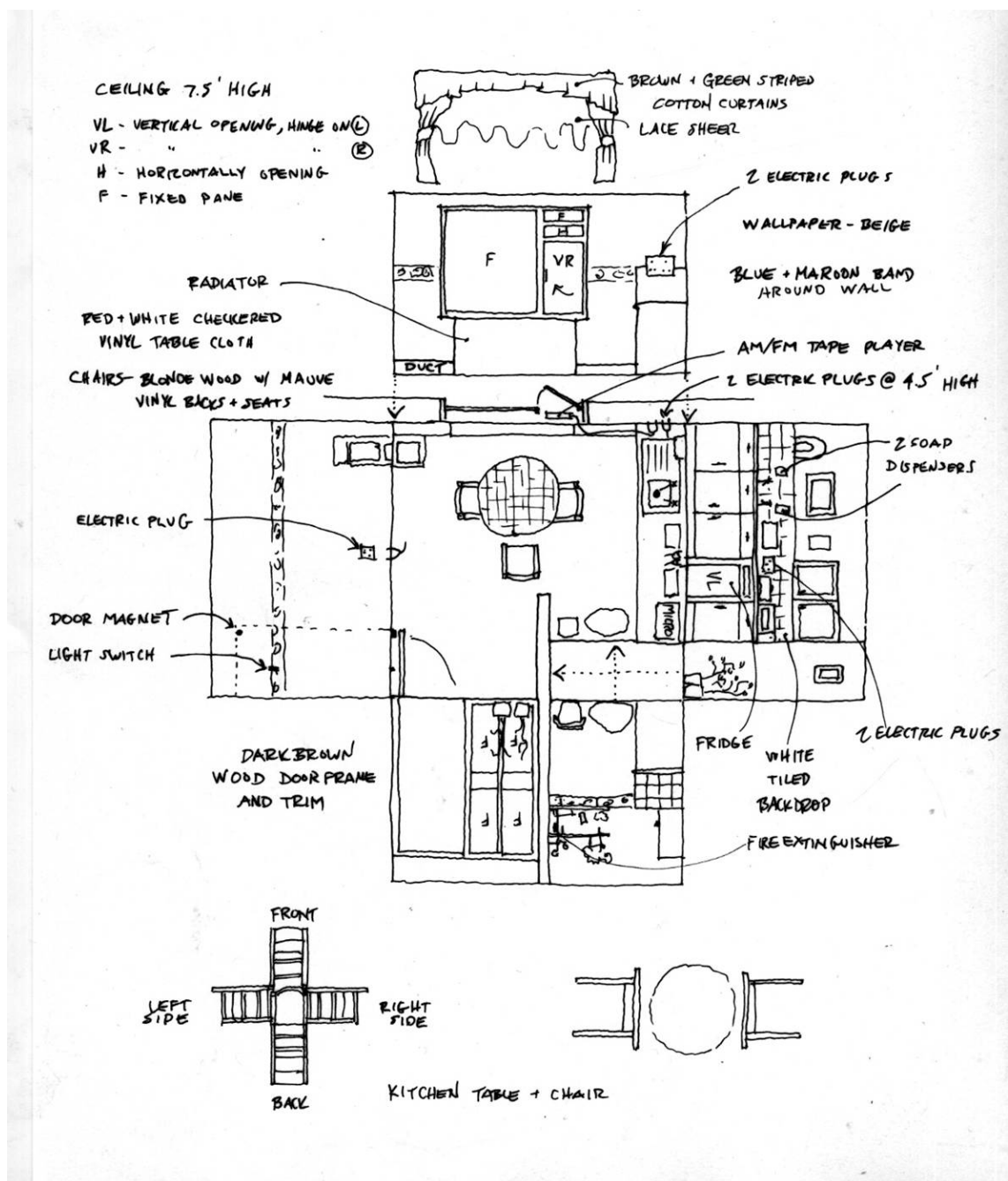


Figure 1.5 - Home One

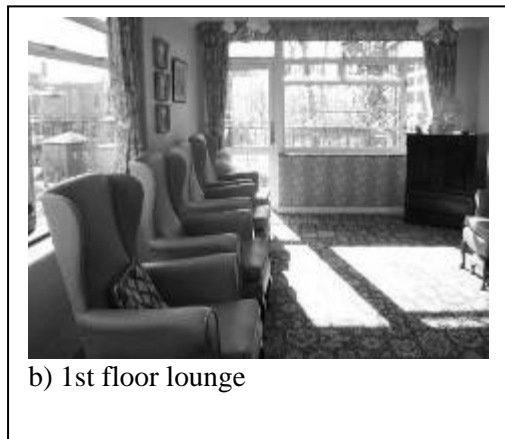
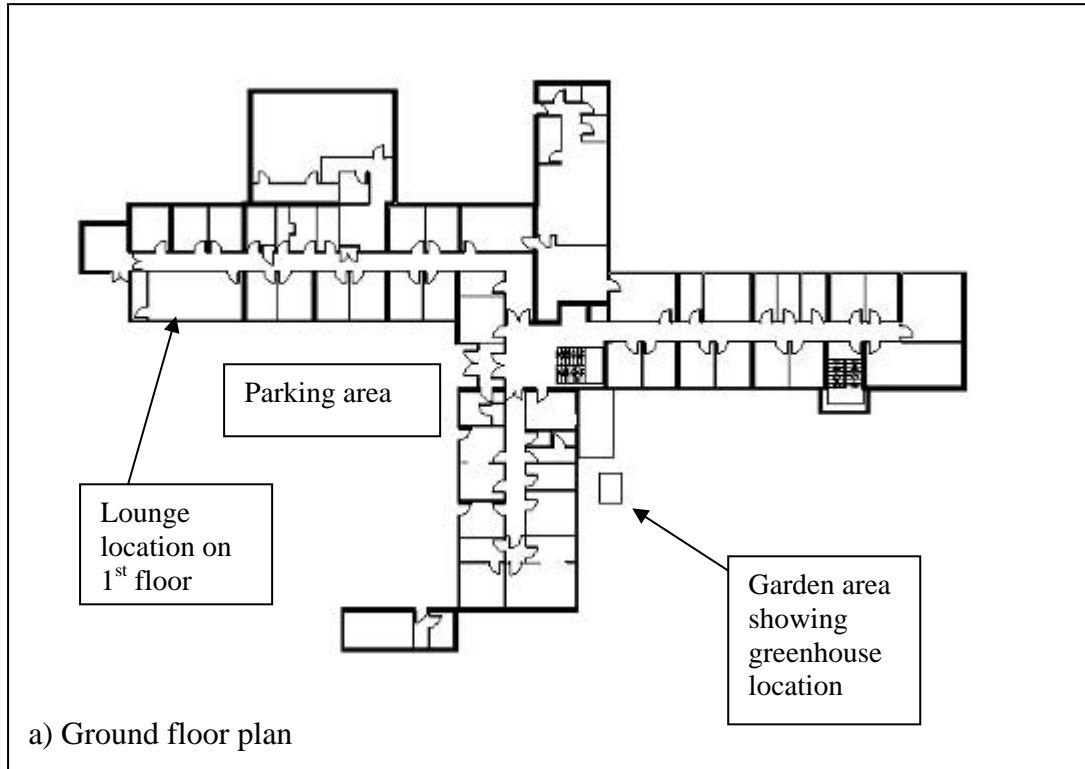
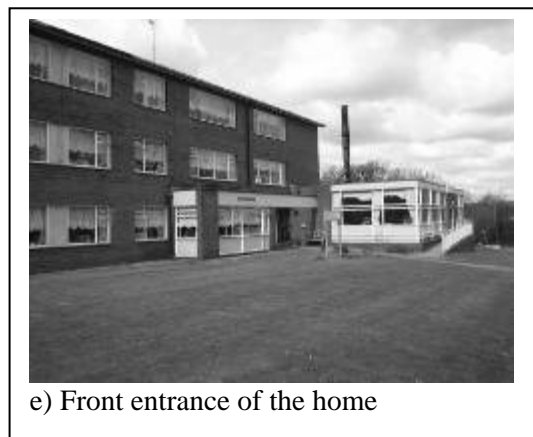
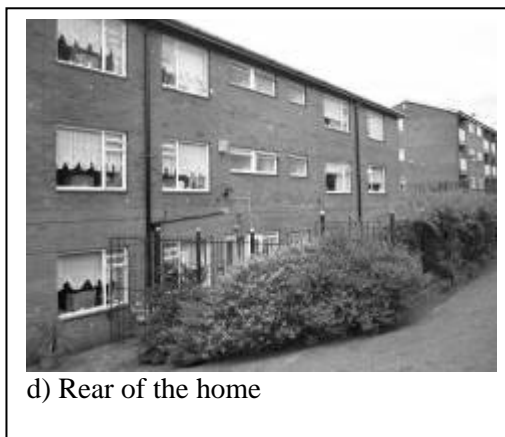
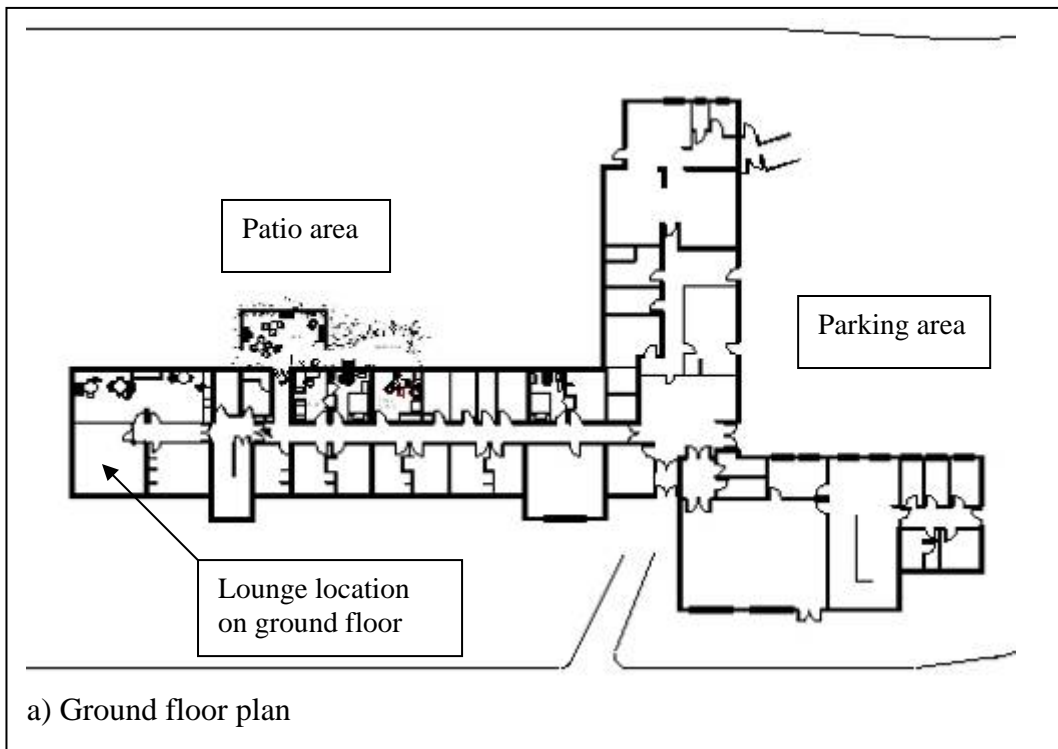


Figure 1.6 - Home Two



1.2.6 STUDY SITES

Two residential care homes were chosen for the study because:

- they each had an EMI unit providing dementia care to a total of 20 residents
- they were situated within the local area which facilitated extensive field work
- access to the premises, staff and residents was made available for the research.

The homes were similar in the age, size and style of the building, as well as serving a mixture of private-pay and socially-funded clients. The homes were owned by the same voluntary organisation so the management, staffing levels and care practice were largely similar. The homes were different in location being at opposite ends of the city, with one set in a built-up neighbourhood location and the other more isolated with larger areas of open space surrounding it. They were also different in terms of the running of the home, with each place being a reflection of the skills, style, personality and experience of the staff persons and the individual managers. The buildings are described and illustrated above as Home One and Home Two.

1.2.7 RESULTS

Study One interviews and focus groups were conducted by the researcher as part of the Independent Project on the topic of quality of life. Within this larger study, connection to nature was one of the topics raised by the participants and several themes emerged. Only themes from the quality of life study pertaining to connection to nature are relevant to the thesis and are presented here. Findings from the Independent Project using the full data set appear elsewhere (Chalfont, 2006; Chalfont et al., 2006; Chalfont et al., forthcoming). Two of the ten interviews included in the thesis research were conducted and transcribed by another researcher on the project team.

What does the residential care environment communicate in terms of gardens and connection to nature? What behaviour is expected of the residents if they are to read the messages from the built environment, and how does this affect their interaction with the natural world? Through 'constant comparison' (Glaser, 1978) of the data, an emotional and psychological understanding began to develop, shedding light on connection to nature, because they involved people's movement within the home and going outside.

The observations which were being carried out at the same time in the two homes provided the necessary triangulation to cross-check the emerging themes and to recognise when saturation occurred. It also facilitated deeper exploration of themes across different individuals, different incidents, and similar events at different points in time. Importantly for the overall aims of the thesis research, pairing observational techniques with grounded theory facilitated a more thorough understanding of the human-environment interactions that would have been challenging for either method alone. Rather than duplicating the findings from the observations, the ground theory analysis enabled the researcher to re-evaluate earlier data ‘for implicit meanings, statements, and actions’, in order to subsequently generate ‘categories in the emerging theory’ (Charmaz, 2004, p. 443). This was especially helpful in understanding personal factors (physical, emotional and psychological and/or sensory) affecting the use, meaning or perception of space by the person with dementia. Several of the themes that emerged are used later in the thesis to more fully explicate the challenges and opportunities the residents face in using their buildings.

1.2.7.1 GROUNDED THEORY ANALYSIS - FIVE THEMES

Five themes will be discussed which seemed to hold particularly strong implications for developing a theoretical understanding of connection to nature in residential dementia care environments, and have implications for the use of space. They are:

- imagined, continued participation
- not home
- time frame identity
- places seem far away
- places become reassuring, then preferable

The first of these themes emerged quite strongly and concerned *imagined, continued participation* in activities. Six out of the seven people interviewed in residential care still believed themselves to be participating in activities in the homes where they lived at some point in the past – but observation showed this not to be the case. All text is identified as being that of the Person with dementia (**P**), Interviewer (**I**) or Carer (**C**).

A 71 year old woman with moderate AZD was admitted to Home Two about two weeks prior to the interview. She said she was depressed because all her friends were dead and she was lonely. She had a son and daughter who visited regularly with their partners. She was fond of her cats and spent time with them on the patio behind her house when she lived at home. She had worked in the printing trade and also as a social worker.

I: 'What do you do in the morning?'

P: *'I just potter around and feed the cat. Tidy round...tidying the house.'*

An 83 year old woman with mild to moderate dementia was living on the upper floor of Home One. She once was a teacher and then a head mistress. She is physically mobile and spends most of her day watching TV in her room. She has no regular visitors.

I: 'Do you have a garden?'

P: *'Yes, well my mother and I do, with a gardener to do the heavy work.'*

A 79 year old man living in Home Two is regularly visited by his brother and daughter, and occasionally by his grandsons. He left school at 14 and worked in the steel forge until retiring at 65. He was an avid crown green bowler and played on a cricket team.

I: 'How do you spend your day?'

P: *'Go out walking a lot.'*

I: 'You go to where?'

P: *'I go to ...across the road, near that fishing pond.'*

I: 'Are you able to take care of yourself here then?'

P: *'Oh, yeah. I can cut a slice of bread and put dripping on it. I can cook a bit.'*

A 78 year old woman lives with her sister (who also has dementia) in a shared room in Home One. She had a large family, a strict mother and a father who played the mouth organ. Weekends were a party. She worked in the silver trade making hollow ware.

I: 'Do you go to the park?'

P: *'Oh, yes. It's a nice park. I always go round. There's all sorts going on. There's a golf course. It's a long climb to the top. Aye, it's coming down. It's all right when you're young.'*

Closely related to *imagined, continued participation* in activities is the theme of *not home*. The six out of seven participants who believed they were still continuing with activities also believed their stay in the home was only temporary, until they were able to return home. They believed it to be a hospital, a respite centre or a holiday camp.

(71 yr old woman, retired printer and social worker)

I: 'Do you come outside much?'

P: *'Not an awful lot. I do it when I'm at home. Potter in the garden...I just come down for a bit of company sometimes...But I don't do it on a very regular basis. Just now and again....I think I might pop in.'*

(85 yr old woman, housewife with mild AZD)

I: 'Who's in charge?'

P: *'Them in the office downstairs. We're only visitors, kind of thing. They're all visitors, come on the bus and that, fortnight kind of thing.'*

.....

P: *'Do they come out in here, patients? Do they, you know?...It's a nice place isn't it. Tis, it's lovely, It's a convalescent home?'*

These two themes are strongly related because for these six people who perceived the place not as 'home' but as a stopping place away from home, they also believed they were still participating in normal daily activities such as going shopping and cooking. When questioned about their use of the space (participating in activities or going outdoors), people differentiated between what they do here and what they do normally when they are 'at home.'

A third theme that emerged, which also had relevance to spatial use, was that of a *time frame identity* (Chalfont, 2006). Participant data revealed that people interviewed often identified as being at an earlier time in their life. This participant's perception alternated between seeing the care home as a place of employment or as a school.

(84 yr old woman, retired factory worker)

P: *'Is that the last one (question)?'*

I: *'It is.'*

P: *'Ay cause there's some more work to do here. I have ... Stood in that and stood in what I'm doing at work and go home and do shopping and cook tea. Anyway have you done work? Cause I haven't. Haven't had me tea in fact.'*

This same participant, upon seeing an agitated resident enter the lounge said,

P: *'She'll not be my teacher. I don't want her!'*

This concept of a *time frame identity* was interesting in that it seemed to be a reciprocity between the physical and social environment and their perception of themselves within it. The perception of themselves as being of school age allowed them to see others as actors in that milieu. So other residents became other students, or indeed teachers. Conversely, the institutional design and layout of the building, the daily routine, communal meals, group activities and being called by her first name, contributed to her perception that this was indeed school and therefore, of course, she was a school girl. This phenomenon coloured the person's perception of the type of housing in which they resided, and the ways they would use it. Drawing on structuration theory (Giddens, 1976, 1984; Pred, 1984) it is possible to understand why residents might be seen acting in ways appropriate for a school environment – responding to instructions, being quiet, staying seated in 'your' seat, not touching things unless invited to and letting others open and close windows. A school-age identity would likely have prevented autonomous activity such as standing, gazing out of the window or venturing unescorted outside. It therefore has implications for connection to nature.

Another theme that seemed to have spatial implications was that *places seem far away*. Outdoor places are perceived as too far to go:

C: *'So she walks quite well in here, but outside she soon gets out of breath; walking further...she's panicked, "I can't do it!" ...'*

C: *'...or going to see her friend round the corner... I thought, Well, it's only round the corner. I'll walk her there. But she said, "Oh, this is too much for me."'*

This difficulty may be physical or psychological or a combination of both. The physical aspect may have to do with learned disability, particularly for residents in home One which has the EMI corridor on the upper level. Residents do not use the stairs which may foster the inability to do so. The two quotes above are about outside movement, but this also occurred inside the home when carers tried to make use of an unused lounge.

C: *'They don't like a change of venue, moving into different rooms is upsetting; moving activities around to use unused rooms is confusing; staff will try to get a person to interact with the others or use a certain room but the residents eventually move back to where they are the most comfortable; to go to another room seems far, to go to a room she's not use to seems impossible; they get use to a place and find their way there.'*

A fifth theme emerging from the data, which seemed to have implications for theories of spatial use, was that *places become reassuring, then preferable*. This occurred as a two step process in which an 88 year old woman with moderate dementia became reassured by the environment, according to her daughter:

C: *'I mean they're here. They're in their own environment. They know all the faces.'*

Gradually, the woman reached the point when she preferred the familiar over the familial – her daughter's home:

C: *'It must be better for me to come and sit with her in this environment than me try and take her home where she's all on edge and she were really uneasy. So I tend to come here now and sit with me mum rather than try and take her where she's not comfortable.'*

These five themes, resulting from the grounded theory analysis of the interviews and focus groups, have spatial implications for the design and use of dementia care

environments. As such they will play a part in further analyses. In particular, *imagined, continued participation* appears below in Table 1.4 nature-related activities enjoyed by people with dementia living in residential care.

1.2.7.2 TRIANGLE CONVERSATIONS

One interview that the researcher carried out included a participant who normally interacted and responded very little, even with her daughters who visited regularly. The interview was set up to occur in a lounge adjacent to her bedroom and to include one other resident who was known to be a peer. They were close in age, grew up in the same neighbourhood and both left school at 14 to work. During the interview they found they had many experiences in common – cinemas, dances, shops and music.

(89 yr old woman with mild to moderate dementia)

P: *‘Mother used to say, “You should behave your damn self!” if we got thrown out (of the pictures)... It were a shame to pull the pictures down... We walked all over...used to walk back and forth on the Bar...Rag ‘n’ Tag Market...loads of stuff, second hand shoes...still we survived, we came through. “Skint” means you’ve got nowt... We had weather in the winter...you had to put summat on, that were it.’*

One of her chores besides washing and ironing was to clean the Yorkshire range every week, using stuff called *‘black-leaded.’* She said she got *‘more on me than it.’* The resident’s daughter was observing but not participating in the discussion. She reported later that she learned things she didn’t know about her mother’s life, and that this amount of interaction was very unusual. Even her voice was louder than usual.

Based on the success of this interview, another triangle conversation was carried out with another participant in the presence of her daughter with similarly positive results – above normal levels of interaction during the conversation, as well as information unheard before – according to the daughter. The participant told of going to the pictures where *‘the cheapest seats were thrupence.’* They sat people on long seats in rows so the owners could make more money by squeezing people together. The pictures were *‘the Roscoe, Rutland and Don’* in the areas of *‘Shalesmoor and West Bar...Lads in the back seats used to throw peanuts and I’d shout “now then stop it!”’* She use to take the tram

to *'Millhouses...it went all through town ...there were long wooden seats down each side.'* She liked riding the tram because *'you could talk to your neighbours.'* It was *'black, not noisy...there were open trams at the seaside...there were double-decked trams...it clanged* (when the upright metal piece hit the cables). *'Ha'penny got you to Millhouses ...could get a paper full of chips for a ha'penny.'*

The triangle conversations proved a fruitful way of gathering data by social engineering of the interview space. The idea of interviewing people with moderate dementia by stimulating interaction with a peer is a novel approach, as far as the researcher is aware.

1.2.7.3 NATURE-RELATED ACTIVITIES

The qualitative data from interviews and observation, as expected, provided numerous nature-related activities which were enjoyed and engaged in, either passively or actively. During such moments, sensory stimulation was perceived, such as the warmth of sunshine and the feel of a breeze.

(71 yr old woman, a retired printer and social worker)

I: *'...what are the things that you enjoy most doing?'*

P: *'Being in a garden, I think...up at Furness it was a long garden.'*

I: *'What was it like?'*

P: *'Just a normal green garden like, yeah, and a few flowers in it.'*

(85 yr old housewife with mild AZD)

P: *'Pleasant in't it...lovely, like grass and trees and what not. I love it. (laughs)
Lovely wall there. Lovely view in't it?'*

(83 yr old woman, football fanatic, still living at home)

P: *'The front room has a great big bay window and it looks out onto the front garden. Well, I don't go in there. I stand in the back room better because it's quieter and it's just a flat window at the back and I look out onto the garden. And all roses. I've got mostly roses.'*

(83 yr old woman, retired head mistress)

P: *'Window looks as if It's clean every day. Don't look out the window, it's a swindle!'*

- I:** 'Why don't you look out the window?'
- P:** *'I thought I did! I like to see...can't find the word...birds on the lawn, not a long time. They don't let themselves get poorly.'*
- I:** 'Can you think of one kind you know?'
- P:** *'Ox.....can't find...I know the names of all the birds. I like the lawn and I like the new people who make the lawn good.'*
- I:** 'Do they come very often?'
- P:** *'Oh, yes. Well they follow a path. They do a lot of things. I bet most people like me will be better. I've forgotten where they were born. They go to a tree with a hole in it and they make a special. They stop there and look at their lives, proper skirts...They're looking for food, animals looking for food. They want to make it into a tree...Can't find the words...the words gone and I know what it is.'*
- (This lady died within a year of this interview)

(79 yr old man, retired steel worker)

- I:** 'What do you think? What do you see?'
- P:** *'Oh it's lovely in't it...nice, fresh...it's lovely this morning in't it?'*
- I:** 'Uh huh...'
- P:** *'Could be a bit warmer... 'What a colour, that yellow' (points and notices the rose bed). 'You've got beautiful yellow though that in't it?' (Yeah, it's beautiful.) 'Yellow rose of Texas!'*

(83 yr old woman with severe visually impairment)

- I:** 'What do you see?'
- P:** *'Oh, I see everything nice, the lovely trees...and look over this side...'*
- I:** 'And what do you see?'
- P:** *'Lovely trees and bushes...ah it's beautiful...it really is beautiful, i'nt it...do you think it is?'*

1.2.7.4 INTERACTIVIST ANALYSIS

The data were next analysed according to the interactivist approach. General types of activities involving nature were first considered according to the input domains of sensory stimulation (Table 1.3).

Table 1.3. Six Input Domains of Sensory Stimulation starting with the body and progressing outwards	
1.0 Body – physical needs & care Pleasant physical sensations 2.0 Being & Moving Walking 3.0 Doing (by myself – with stimuli) Gardening Observing nature, flowers, trees Looking out the window Feeling the sunshine, warm breeze Watching birds & squirrels 4.0 Doing (with others - people or animals) Swimming Visiting, socialising Caring for a pet, animal Aromatherapy, foot & hand massage	5.0 Housekeeping & Homemaking Kitchen chores, cooking, baking 6.0 Going out Shopping Going to the post office Going for a walk Walking the dog Pottering in the garden Holidays abroad – flying Pub trips; day trips Riding the bus; tram Going to the garden; patio Playing bowls Driving through the countryside Football game, sporting event

From the data, the activities were then mapped out or ‘forced’ into three geographical domains as to where or how the activity occurred (indoors, outdoors or going somewhere). As well as geographical domains, the data also mapped out into social domains of whether they were enjoyed alone or socially. And finally, given the grounded theory discussion above, the activities were further classified by what are termed actual, remembered or imagined domains. Here are the five analysis domains listed, with the data classified accordingly in Table 1.4:

- | | |
|-----------------|--|
| 1) Social | enjoyed alone or socially |
| 2) Geographical | indoors, outdoors or going somewhere |
| 3) Actual | activities they actually still do and enjoy doing |
| 4) Remembered | activities enjoyed in the past (and remembered now) |
| 5) Imagined | activities they believe they still do and enjoy in the present,
although in our reality they do not still do them |

<p align="center">Table 1.4. Nature-related activities enjoyed by people with dementia living in residential care classified as actual, remembered or imagined activities according to social and geographical aspects</p>			
		Enjoyed alone	Enjoyed socially
<p align="center">Actual activities they still do</p>	Indoors	Looking, watching out of the window Having a view Observing nature, flowers or trees Standing in the doorway	Looking, watching out of the window Having a view Observing nature, flowers or trees Indoor plants and flowers (live and artificial)
	Outdoors	Sitting in the sunshine Feeling weather, sunshine or a breeze Observing nature, flowers or trees Bird / squirrel watching or listening (enjoyed 'alone' means seated by themselves, not outside by themselves)	Going into the garden at the family home Sitting on the patio Having a meal or a drink on the patio Going for a walk
	Going somewhere	(none)	Day trips, outings; Going to the pub Going to the countryside or the seaside Going to church
<p align="center">Remembered Activities the person spoke about enjoying in the past</p>	Indoors	Keeping, touching or caring for pets	Talking to locals, shop keepers
	Outdoors	Tidying or pottering in the garden Gardening, potting plants or weeding	Family gardening Talking to the neighbours
	Going somewhere	Walking the dog Going to work Driving through the countryside	Travelling abroad; flying; Going dancing, tea dances, cinema, show, concert Going for fish & chips, ice cream Going on honeymoon Going to the countryside; Playing cricket on a team Going out with friends; Riding the bus or tram Visiting a family member's house Going on holiday; to the seaside; swimming; on a barge trip

Imagined Activities the person feels they still do in the present	Indoors	(None)	(None)
	Outdoors	Tidying or pottering in the garden Gardening, potting plants or weeding;	(None)
	Going somewhere	Going for a walk	Going to the park, common, or bowling green; Going for a walk; Fishing

The various human factors (personal, formal care, social network, both formal and social care and cultural & spiritual aspects) enabling or challenging participation by a person with dementia in nature-related activities are listed below in Table 1.5

Table 1.5 Human factors (personal, social, cultural and spiritual) enabling or challenging participation in nature-related activities by persons with dementia living in residential care		
	ENABLING	CHALLENGING
Personal	Remembering they used to enjoy doing something; Physical strength & agility, dexterity in hands Sensory abilities – hearing, seeing; Use of walking frame or wheelchair; If they enjoy walking about, nature activities involving walking will be an encouragement to participate; If they enjoy socializing, nature activities involving other people will encourage them to participate; May respond positively later to a suggestion they have initially turned down, due to changes in mood.	Forgetting they enjoy something; Getting bored and/or losing concentration with an activity; Forgetting the need to do or how to do something; Inability to initiate; perceived ' <i>lack of initiative</i> ' Thinking they won't like doing something, may resist doing it; Don't like to go too far away; Physical disability, frailty, feeling cold, pain or fatigue; Sensory disability – deafness or blindness; Depression and sadness, tearfulness Unsettled, agitated, needs to ' <i>get back home</i> ' Fear of falling; Wayfinding - may not know left from right, understand directions or recall the way back home; Problems with continence, transferring & travel sickness

Professional Caregivers	<p>Allowing the person to keep a pet; Having a bird feeder outside their window; Carers interested in the person; What the person was like and what their passions used to be; Allow outdoor tasks such as sweeping or serving; Provide time & space for <i>'pottering'</i>, tidying up</p>	Not enough activities scheduled or happening
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Family & Social network	<p>Choice & feeling of care home – does the building feel full of light & fresh air? Connection to local neighbourhood; Visits from friends and family; Bringing flowers, plants and animals/pets; Taking PwD to visit their own garden; Having somebody to go out with</p>	<p>Memory – if they do not remember doing things (trip, activity), did they (will they) benefit? Family disappointment if they put on a special event and the person forgets it, does not even recognize themselves in photos afterwards; Not wanting to go outside: <i>'They just want to be inside, warm and safe'</i></p>
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Cultural and Spiritual	<p>Activities that are gender and age appropriate; Familiar and recognizable activities; Peer support for traditions & values</p>	<p>Through stigma of dementia or on advice from psychiatrist, the person is not allowed to <i>'live in the past'</i> - if they talk about activities they can no longer do as if they are still doing them, they are <i>'pulled back into the present'</i>; <i>'Time frame identity'</i> (how old they think they are) affects participation in activities</p>
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Both professional and social care	<p>Insisting they participate if they know PwD enjoys it Going along with <i>'their rules'</i> if playing a game; Providing transport; Taking them for a walk outside; Providing encouragement; Providing prompting and reminders; Accepting participation <i>'at a certain level'</i>; Encouraging discussion about past enjoyed activities; Having correct information about dementia informs actions and efforts; Giving the person choice and control</p>	<p>Professional carers are lacking the time & resources needed to take people outside; Family carers not having time for <i>'extra'</i> things like going outside on a routine visit</p>
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Built environment elements or factors impacting participation in nature-related activities, categorised by indoors, outdoors or going out, appear in Table 1.6.

Table 1.6 Built environment elements or factors impacting participation in nature-related activities by people with dementia living in residential care	
Indoors	Seating & standing space near windows Moveable seating - can pull near to a door Views out of people, cars, community, activity Doors the person can open to the outside An outside area meant for residents to use Windows that are opened routinely Automatic door openers Rooms and spaces specific to activities help reinforce meaning and prompt participation Presence of natural materials, living things
Outdoors	Access to the toilet Microclimates create sunny places, protect from cold, wind Proximity to neighbours - talking over the fence develops relationship, communication unlocked, unblocked doors Something nearby outside to walk to Wheelchair access to garden areas Visibility from indoors of outdoor areas Secure perimeters of outdoor spaces Ground floor, level access to outdoors Seating of different sizes, materials & types Tables, umbrellas, small tables to put things on Planters & pots, trellis, arbour, greenhouse
Going Out	Existence of local places nearby If the fabric of the neighbourhood includes farm, river, park, or field Integration of transport with the built environment (I'm nervous telling Dad to stand still while I go and park the car)

1.2.8 ANALYSIS OF OBSERVATIONAL DATA

This section presents the combined findings from the two main observational components of Study One - the time-space geography mapping and the field notes, analysed according to observations of residents, care provision, and the building.

1.2.8.1 OBSERVATIONS OF RESIDENTS IN THE HOMES

Mobility and toileting - A person's mobility was the greatest predictor of that person's range of movement inside and outside the home. The minimum distance a person walks is from their bedroom to the lounge, from the lounge to the dining room and back three times a day, from the lounge back to the bedroom at night, 2 or 3 trips to the toilet daily

and one trip to the bathroom weekly. At least one resident in each home stayed in their room all day. Neither home had ensuite bathrooms or toilets. Additionally, more mobile residents made a few trips back and forward along the corridor and into and out of their bedroom. Residents in neither home used any stairs and only used lifts when being taken out. Residents in both homes who mobilised with a walking frame were less likely to be seen outside of the daily circuit (bedroom – lounge – toilet - dining room – lounge – toilet - dining room – lounge – toilet - dining room – lounge – bedroom) than those who mobilised without a frame.

Going outside - Residents in Home One did not go outside unless relatives came and took them out. When this happened, the family took the person out in a car to somewhere such as a favourite pub or the family home. Taking residents down into the garden at Home One by staff or family carers was not observed. Residents in Home Two were likely to be seen outside on the patio if they either walked unaided or if they were taken out by care staff. The lounge in Home One had a balcony area for which the door was observed as being open during warmer weather. No residents were observed sitting or standing on the balcony, nor responding as if the door to it was open.

Human contact - When in the lounge, residents of both homes experienced few visits of a non-task nature by care staff. Visits to the lounge tended to be ‘checking’, taking a person out of the room or bringing a person in or administering drinks or medication. Entering the room to ‘check on everybody’ often included the making of comments, ‘You’ll be going in for tea soon,’ or the phrasing of a question to residents, such as ‘You alright?’ Care staff were occasionally observed spending time in the room and having two-way conversations with a duration of over one minute with the residents. This was observed more often in Home Two. It was not possible to know to what extent the presence of the researcher affected these observations. It was initially assumed that his presence may increase human contact by carers with the residents during observation times. On the contrary, indeed at times during observations within a room for an hour or more, the presence of the researcher in the lounge may have increased the infrequency of staff visits to the room. Domestic staff persons in both homes were observed providing human contact with residents of a non-task nature. Visits from family carers occurred more often in Home Two. Family visits in Home One tended to occur in the resident’s own room, often with the door shut. Family visits in Home Two

were most likely to occur in the lounge, unless the person spent the day in their bedroom, in which case the visit occurred in the bedroom. When family carers visited residents who mobilised with a frame, such visits were not observed to include going outside the building. Family carers who visited mobile residents were observed going outside the building only at Home Two, where the visit sometimes included a short trip outside onto the patio. Family visits, like life in the homes, were routine and cyclical. They occurred like clockwork on certain days at certain times with no flexibility as far as the room in which they occurred. For a family member to 'drop by' unexpected was extremely rare.

Individual's perceptions - There were various levels of awareness by the residents which affected their use of the home. Some residents were not aware that they actually lived in the home on any sort of a permanent basis. This group of people thought they were visiting - that this was a day centre (and they were going home at the end of the day) or a place for rehabilitation (and they were going home after a few weeks).

P1: *'I don't know what I'm doing here...where is this place?'*

.....

I: 'Why are you here?'

P2: *'Don't know...must have, you know, said summat wrong.'*

These people also thought they had a family at home waiting for them and responsibilities to children and husbands for cooking, shopping, and housekeeping.

P: *'I'll not be stopping here long. I've got a family to go to.'*

This perception was found to negatively impact the well-being of individuals in profound ways. For instance, the observation that people spent hours of every day sitting in a chair remote from family members, their own home, social contacts and neighbourhood, with nothing but their care needs met is proof that they think this is temporary. Who would agree to such conditions every day for the rest of their life?

I: 'How do you rate your quality of life?'

P: *'Nill'. (laughs) ...It's better than a lot of people's, I know that. But it's not satisfactory as I'd like it to be. But what can I do about it? Nothing...without money, can ya?'*

.....

I: *'To what extent do you feel you have the choice to do the things you want to do?'*

P: *'I haven't a choice! I haven't any choice at all.'*

.....

I: *'What's it like living here?'*

P: *'It's like living in prison. No, it's worse. At least in prison you know when you're getting out.'*

People who thought of themselves as visitors seemed generally unhappy. Although they did not remember cognitively how long they had been there, on some level they seemed aware that they were being prevented from going home, and were being given no true explanation as to why. This was expressed by the resident having a general distrust of the care staff who they believed belittled, ignored, dismissed or lied when asked:

P: *'When am I going home?'*

Five of these people at various times of the day were extremely angry. Behaviour prompted by this perception was of two extremes. One resident spent all day in her room, fought at bath times, rarely smiled, resisted care, put up with eating in the dining room but would have been happy to have her meals in her room. Three other residents with this perception took a range of positive actions including packing up their personal belongings, walking back and forth, checking doors and inquiring constantly of staff:

P: *'Have you seen our Harry? Or our David?'*

One resident was clinically depressed and spent all day every day curled up on his bed, sometimes with a pillow on top of his head. The 'nurses' made him get out of bed and sit in a chair to eat his meals. He had given up trying to eat in the dining room as the loud, offensive or incomprehensible language from other residents was very disturbing

to him. On one occasion, while sitting in his chair with a tray of half-eaten food on his lap, he begged with the researcher:

P: *‘Please tell me I can get on my bed! I just want to lie down. Why won’t she let me lie down?’*

A small number of residents were ‘settled’ (care-speak for requiring minimal attention) and seemed generally happy. Their perception was not easy to determine because their verbal communication skills were compromised by moderate to severe dementia. They may or may not have been receiving regular visitors. They did not ask to go home, nor did they question why they were there or what was asked of them. People who appeared settled were agreeable to participation in activities such as going out for a walk or sitting outside in the nicer weather.

Seating in the dining rooms - Residents in both homes sat in the same seat each day to eat their meals. Minor exceptions occurred if a ‘confused’ resident entered the room and chose a seat before the regular occupants arrived, then some shifting about occurred. More often a member of staff would move the ‘confused’ person into their usual seat so as not to confuse the others.

Seating in the lounges – Some residents in both homes tended to sit in the same seat each day in their respective lounge but minor exceptions occurred for specific reasons. In Home Two the lounge was not large enough to hold all ten residents as there were only eight seats. So, as people entered the lounge from the dining room after a meal it was first come, first served. Also, there were more people who were able to self-mobilise so there was more getting up and walking about, which made it possible for people to swap seats. Everybody did not always want to return to the lounge after a meal. Some people went to their own room or went for a walk on the corridor or out to the patio. In Home Two no comment about ‘my seat’ or ‘her seat’ was heard by the researcher during the observations.

In Home One the lounge was longer and there were more seats than the number of people who generally needed to use them. Perhaps because there were enough seats available, residents in Home One tended to be seated in the same seat more often than residents in Home Two. The logic of placement seemed to relate to physical mobility.

People who used a walking frame tended to use seats either closest to the door or seats that could be approached with as little manoeuvring as possible. The seats that were left were routinely used by the more able-bodied people. So every resident who routinely used the lounge had a seat they were observed using most of the time, although the reasons they were using it may have been about their needs or about a reaction to the needs of others - taking the remaining or available seat out of habit. This resulted in able-bodied residents having their 'own seat' as well, taking the left-over seat enough times that it eventually became the one they normally gravitated towards. Interestingly, the television and CD player were at the end of the lounge furthest from the door - at the greatest distance from those with more pronounced physical disabilities, who happened to also have sensory disabilities such as hearing loss and visual impairment. There were often discussions in the lounge in Home One in which somebody made a reference to 'her seat.'

Alterations to the general pattern in Home One occurred when a resident who occasionally used the lounge came in and, due to his physical disability, took the first available seat. As the others arrived they shifted their seating choices accordingly. During occupancy mapping of the lounge in Home One, alterations to the usual pattern were only found when this resident was in the room. When in the room he was always in the chair closest the door. Three arguments related to seating in the lounge were observed. All three were between residents over the occupancy of 'chair one' and involved a heated discussion between two people with severe mobility limitations vying for the prime position. One person was sitting in the chair when the 'usual' occupier arrived and needed to sit down. One argument ensued to the point where the researcher went in search of a care assistant to intervene.

Another factor of seating choice was how quickly people finished their meal and returned to the room. One resident in Home Two made a bee-line to a certain seat after dinner. All occupancy maps for 13:00 to 13:30 showed this resident in this seat. She was one of the more physically able residents on the unit as well as being of a higher MMSE (21) than the average resident on the unit (mean = 8.5). Her choice affected other residents very little because her seat was not the one nearest the door. Also in Home Two the overall levels of physical ability were slightly higher than in Home One - three people needed a walking frame and/or carer assistance to mobilise versus two.

Although the two main impacts on seating in the lounges seemed to be physical mobility, or simply who arrived into the room first after a meal, exceptions also occurred. While people with the most difficulty walking generally took the seats closest to the door, as it was the least distance to walk, one person who struggled to walk with painful arthritis routinely chose a chair that was the second seat from the door (6 steps further) and in a corner of the room. As this person was profoundly visually impaired, she may have felt more comfortable with her back to a corner and her field of vision limited by the 90 degrees framed by the walls emanating from the corner of the room. Also, if a resident used the lounge less frequently than the others, when they did choose to come in they upset the usual pattern, and the other residents adjusted accordingly by choosing between the remaining seats according to their mobility limitations or who arrived first.

As a result of these physical needs and necessities of seating, choosing a seat for its view or nearness to a window was the privilege of only the most physically mobile residents. Therefore, connection to nature was determined by the least able people by their mobility needs rather than their sensory desires or psychological preferences. Sensory stimulation was achieved and moderated by the most mobile persons throughout the day as they walked throughout the home. The only evidence that a person chose a room or a seat to gain a view to outdoors occurred possibly in the lounge of Home Two in which the chairs positions enabled residents to see local activity. This will be addressed below in the section on 'building.'

Views to inside activity – The lounge in Home One is along a corridor and so the door faces a wall. No chair in the lounge has a view down the corridor. The lounge at Home Two is located at the end of a corridor and so there is one seat facing the door with the advantage of looking down the corridor. One resident frequently sat in this chair and she gave the following reason why:

P: *'Me relations...when they come...they can see me.'*

1.2.8.2 **OBSERVATIONS OF CARE PROVISION**

Meals - Both homes had a routine which was identical 7 days a week and included set times for meals, drinks, toileting, getting up and going to bed. The routine was

coordinated to include food and drinks delivery from the main kitchen, beginning and ending of work shifts and staff breaks. Tea and biscuits were served in the lounge. Drinks were occasionally served outside at Home Two on the patio in fair weather. Special events such as a V-Day tea party also occurred on the patio. Drinks were not observed being served outside at Home One.

Sleep/wake – Residents were woken and dressed in time for breakfast. Although, in both homes residents were observed in their beds past breakfast time which would indicate there was some flexibility of the daily wake-up routine. At certain times of the day, usually when residents were in the lounge after a meal, it was common to see the majority of residents in the lounge dozing in and out of sleep. During one DCM session a resident in Home Two was observed asleep in the lounge from breakfast until lunch. No night time observation was carried out so it was not possible to know if that resident was sleeping at night.

Activity – On most days no activity was carried out with the residents outside of the routine stated above. Residents were not taken off the unit unless family carers took them, or unless they were sick and going to the hospital or a doctor's appointment. Unlike the day centres in both of these homes, there were no daily structured activities planned. On a weekly basis the company provided a visit for an hour from an activities worker. A sing-a-long was observed on one occasion, attended by five residents, and one other resident who came onto the unit from elsewhere in the home. Unstructured activities were provided by care staff more often in Home Two, including reading to the residents from the local newspaper, watching a video or putting flowers into vases for the bedrooms. A family carer in Home One frequently brought in fresh fruit and gave some to everyone in the lounge during his visit.

Care/hygiene - Care and hygiene tasks were carried out in the toilets, bathrooms and bedrooms. Residents generally were given a bath at least once a week. The attention to hygiene and resident's appearance, dress and accessories was observed as of a higher quality in Home Two. For instance, in Home Two residents consistently wore their own clothes and usually some piece of jewellery besides a watch, such as a necklace, bracelet or broach. In Home One the name tags in clothes being worn did not always match the person wearing it and jewellery other than a watch was rarely worn. Only one

resident was observed wearing a bracelet, which she said was given to her by her granddaughter. One resident was seen by her son wearing a frayed, collar-less button-up house coat or smock, and remarked:

C: *'She's got a wardrobe full of nice clothes and she's wearing this. Don't even recognise it.'*

'Green heart' on staff – In Home Two there was one staff person (S) working in the laundry who had a special interest in nature and took personal responsibility for keeping plants alive and healthy within the home.

S: *'...took it to 't laundry and I repotted it. And every day since then for about a year I've talked to it, and I've stroked it, and I've called it me little darling, me little sweetheart and I've fed it every week... and look at it now with a flower. And you know I were never more thrilled when that flower came on that, never more thrilled at all. And now you see every time they get a poorly plant now who gets it? Me. Me, I get all poorly plants. I walked in 't laundry other day and they said, Oh, have you seen that plant that I've gave you Murna? And I said, Oh yeah, poorly nursery again, ...Cause they know I'm good to 'em. I talk nice to 'em, yeah. You know you're supposed to talk to plants don't you? There's a new leaf here but that could be a flower. Nature's wonderful ain't it? Really wonderful. I really love everything about flowers and trees and birds and you know I really, really, really do. One of the nicest things that whoever it were created 'em created. So what I do is I go round every Monday and I take a bucket and put some Baby Bio in it and I go from top to bottom in 't home and I water every one religiously every Monday, just to make sure they've all had a little drink.'*

Another staff person working in the day centre also took particular interest in horticulture and involved residents in activities such as potting up tomato plants on a table on the patio and then putting them into the greenhouse. Such people could be called 'green hearts' as they have a green thumb and the heart to involve residents.



1.2.8.3 OBSERVATIONS OF THE BUILDING

Corridors - At both homes the corridors were double-loaded so walking them afforded the residents no natural stimulation from fresh air or sunshine, and no views out. All stimulation they received during the course of the day in Home One occurred in the lounges, dining room and resident's bedroom. This was similar in Home Two but also included the outdoor patio area.

Chairs in lounges and bedrooms - The EMI unit in Home One was on the first floor (UK; second floor in the US). Therefore chairs in the lounge (the room where people spent most of their day) looked out from upstairs. By sitting in each seat in each lounge, the researcher observed that residents could see no activity on the ground from a seated position in the lounge or dining room of Home One. From this lounge and from some of the bedrooms in Home One there was a view out onto the ground from a standing position in the room. This view was not from the seat the resident would be using, because the seat in a bedroom usually faced the door, not the window. An example of a typical bedroom layout is shown in one of the sketches made of individual rooms.

Chairs in bedrooms - Exceptions to the typical bedroom layout above were bedrooms in which the person, for a number of reasons, spent most of their day, usually watching their own television. Furniture for these residents was arranged in the room to facilitate a chair in front of the television. These chairs were smaller than the typical upholstered Queen Anne-style high-back lounge chair with solid arms and wings for head support. In these bedroom arrangements, the chair in which the resident spent most of their day also had a view to the outside. This was possible because to face the television meant that the window was to one side of the person, as opposed to behind their head. Contrary to those rooms in which the person watches television and has a window view

to their side, most bedrooms had a large chair near the sink, facing the door with the person's back to the window. To further complicate the residents' ability to look out from their bedrooms, chairs facing the door in this way had enough space and usually therefore were a Queen Anne style, but the head support wings actually prevented people from turning and seeing out the window. Chairs that were the smaller style and used to facilitate TV watching, which were turned so a view outside was also possible, *could* have been a Queen Anne style because the head support would not have limited vision. But the room was too small to fit the larger style chair into, if it needs to be turned sideways.

Windows and window sills – Some windows did not open because over time the latches had been painted shut. Residents were never observed opening or closing windows, which was left for care staff to do. All windows had a limitation on opening to a few inches to prevent people from falling out or absconding, but also as a security measure to prevent somebody from coming in or throwing things through the windows. This was a very real concern as Home One had a flat screen computer monitor stolen by somebody reaching into the ground floor office and pulling it off the desk. Home Two had incidents in which young people picked up mulch from the garden and threw in into a resident's bedroom and into the clerk's office.

Lounge Two had windows on two sides as it was on the corner of the building. This position afforded sunlight and cross ventilation for most of the day, whereas Lounge One tended to be hot and stuffy by the afternoon. The provision of windows posed both comfort and discomfort issues. Draughts were easily felt by frail residents and their mobility challenges made it impossible for them to move on their own if they were uncomfortable. But also, on a warm day the availability of a cross-breeze in the room was a welcome relief for many. It was observed that even on a warm day when most residents commented on being too warm, one resident asked the researcher:

P: *'I think it's cold, do you?'*

I: 'No. Are you in a draught?'

P: *'I could be but I thought I shut window. I haven't because look where it's blowing that top window.'*

I: 'What's it doing?'

P: *'Blowing in that top window. Look at it blowing, look.'*

The height of the window sills in the bedrooms and the lounges was the same. The lounge in Home One was on an upper floor, had windows along one side of the room and had windows and a balcony at the far end of the room (see in Chapter 3, Figure 3.2, Lounge 2). The balcony was not used by residents although the door to it was observed open on more than one occasion. Few residents sat near that end of the room, and the view out of those windows was of the upper canopy of trees. So from the usually occupied seats there was no view of activities on the ground through these windows at the end of the room. There was also no light entering the room from the end windows as it was the north-facing side of the building and it had an overhanging roof above the patio. The other windows along the side of the room afforded a view to the parking lot, a grassy slope, trees and apartments next door (formerly a castle). This full view was only possible from a standing position in the room. Partial views of the trees and the apartments were possible from three seats lined up against the window, which pointed into the room, as residents were observed turning their heads in these chairs to look out. The seats on the opposite side of the room facing the window were far enough away from the window to prevent a view of ground level activity. These seats did however have a view of the tree tops and the sky. Residents were observed looking out of the window as they entered the room and on the way to 'their' seat.

View content - Dementia Care Mapping of residents in the lounge of Home Two was carried out on several occasions to determine in detail how people were responding to the stimuli both the room and the views afforded. Mapping provided evidence that 6 out of 8 seats in the lounge afforded a view of ground level activity outside, including pavements, a bus stop, houses and gardens, traffic, pedestrians, lawn and trees.

Curtains and Privacy – The issue of privacy in residential care environments is a broad and important topic that is not treated in any depth in the thesis. The exception to this is the observed areas where privacy overlapped with connection to nature. Two topics in particular are addressed – curtains and privacy outdoors. Home Two had net curtains as well as regular curtains at every window, lounges, dining rooms, bedrooms, except bathrooms which had frosted glass. Home Two did not - the rooms were decorated with only curtains. Curtains in either home were not observed as ever being closed, for

instance at night. (The Snoezelen Room in Home Two was the exception to this as the curtains were closed all the time to facilitate using the special lighting effects.) What the net curtains offered the residents, according to management in Home Two, was a level of privacy from the local neighbourhood. It was noted that some residents took their clothes off without regard to protecting their personal privacy, and that in the event the net curtains could provide some level of privacy and dignity.

The net curtains, because they served to somewhat screen the residents from the views of people in the street, afforded them the opportunity to peek out without being seen as peeking. From inside one could, while standing up, see through the mesh of the curtain, or while seated, peer out from underneath the curtain between the curtain and the windowsill which modulated in height given the scooping style of them (Chapter 3, Fig. 3.5). The curtains limited incoming sensory stimulation because they filtered the sun and the views through the curtain mesh. They facilitated views out by allowing people to look without being seen. The net curtains addressed the issues of privacy, sensory stimulation and connection to community in an imaginative way.

Social Contact and privacy while outdoors - Another aspect of privacy that arose during the observations involved an outside garden area. During one interview a person told about a place where she lived before moving into the home, where she sat outside in the sunshine with her house mate, played the radio, knitted and spoke to the neighbour.

P: *'Used to be a next door...a next door garden...different flowers.'*

I: 'What kind?'

P: *'Roses and things...and different coloured flowers.'*

I: 'What did you do with the flowers?'

P: *'If we asked him he'd give us some.'*

I: 'That's nice...and what did you do with them?'

P: *'Used to put them in a vase.'*

I: 'Mmmm, and then where would you put the vase?'

P: *'In house! ...uh, in living room.'*

I: 'Why did you like that?....having flowers in a vase in the living room?'

P: *'Uh, it's be...it's be nice.'*

I: 'Did they have a nice smell?'

- P:** *'Ummm, yeah...'*
- I:** *'What did they smell like?'*
- P:** *'Scents.'*
- I:** *'Can you describe that scent?'*
- P:** *'Uhh...perfume.'*

There was an element of proximity that afforded both privacy and closeness to other people who were known to them. She could feel private and enjoy sitting outside the back of her house but at the same time have some social interaction. The design of the physical space afforded both. Observations of the two homes revealed that no such arrangement was possible for the residents now. The homes were either too far away from residential housing or the outdoor areas were designed in such a way that residents were prevented (through screening, distance or the lay of the land) from both seeing and being seen while outside.

Animals and wildlife – In both homes some family carers made regular visits with a dog. This was enjoyed by the resident they came to see, but also by others in the home. The presence of wildlife was noticed and enjoyed by people sitting outside and also by people watching through windows. The landscape design and plantings, on-site and nearby, provided habitat which supported the appearance of wildlife, in particular birds and squirrels. The researcher's professional experience as a landscape architect enabled him to identify the landscape elements which contributed to affording or limiting the presence of wildlife in both homes. The presence of wildlife enabled this conversation to take an interesting turn back into the participant's early family life:

- P:** *'Oh, garden was alright except when he (father) started having us "it's your turn to this and it's your turn to that."'*
- I:** *'What did you like to do in it?'*
- P:** *'I wa'n't bothered about ought in garden. One of me () coming through now.'*
- I:** *'What's coming through? Show me. (She points out the window to a blackbird on the hill.) Oh, right. What is it?'*
- P:** *'It's one o 't chickens, don't know which one it is.'*
- I:** *'One of the chickens? (Mm) How many chickens do you have?'*

- P:** *'I don't know, it's got two or three. Sometimes they alright, sometimes they's difficult, run away.'*
- I:** *'Is that you're job? What did you have to do with the chickens?'*
- P:** *'Sometimes you have to, you know, feed 'em first...and wash 'em.'*

In summary, multiple factors limited natural sensory stimulation possible for residents of the homes. To uncover not just the factors (in other words the 'what') but the issues and interactions as well (the 'why'), extensive observations were carried out. The reasons 'why' included the size, shape and location of the rooms; amount and location of seating; style, size and position of furniture; normal seating patterns and exceptions to them; individual preferences and needs such as mobility, going outside and human contact; advantages and limitations of rooms and spaces in the building; thermal comfort and air quality; views; the effects of daily routines such as care tasks and meals on the use of space and the personal perceptions of the residents as to where they are, why they are there and when are they going home. Elements from the observations as well as elements from interviews and focus groups are included in the SLANT tool developed in Study Two.

1.3 FINDINGS AND DISCUSSION

Most people shared a common understanding that 'nature' for them meant relating to the earth and living things, for instance trees, plants, animals, the ocean, the sky...

- I:** *'What contributes to their well being?'*
- C:** *'Animals, dogs, children, flowers.'*
- C:** *'I think a garden, which we haven't got. They have a patio area which we've done the best we can with plants and flowers etc, but we've no garden.'*
- C:** *'I sat and looked at books with one particular lady about birds. She was very ... very, very much into nature, wasn't she? Cats especially... But I used to enjoy that as well with that particular lady because she really, really loved nature. Really loved nature.'*

Simply being ‘outdoors’ was mentioned as valuable. When asked why, respondents mentioned natural elements such as fresh air and sunshine. A definition of ‘connection to nature’ emerged from participant self-reported data. For this research, ‘nature’ can now be defined as: ‘plants, animals, earth, water, sun, sky, air, season and climate.’ A ‘connection to nature’ can be defined as sensory enjoyment of such things.

The first and second research questions were as follows:

- *Is nature identified as enjoyable to people with dementia?*
- *If so, in what ways is it enjoyed?*

The findings confirmed that for different people on various occasions and in many ways, nature was identified as enjoyable through nature-based activities and sensory stimulation. The following quotes illustrate the findings. These are from carers:

C: *‘They love birds, hearing birds because we’ve got an owl at night and they have the birds in the morning. You can hear ‘em chirping away. They like to watch squirrels as well, don’t they? We’ve got a lot of squirrels.’*

C: *‘She’d like going in the garden at home...and ... if we are in the garden later on she’ll say, “Well, I’ll just get them few. I’ll pull them out.”...she’s tried her best... to get a few weeds out and things like that...and then we’ve said, “Well, we’ll sit out and watch you then. We’ll sit outside.”’*

C: *‘He brings the dog every day when he comes and they love just to stroke him because he’s ever so ... He must brush him before he comes in. He’s ever so soft. It’s quite therapeutic for ‘em though, in’t it, having animals come in. They love seeing animals. We used to have a budgie...’*

The following is from a conversation with two ladies sitting outside on the patio:

I: *‘What are you doing?’*

P1: *‘Taking the sun. Not very often a chance to take it... Well, it’s nice in’t it, to get some sun...Hark at birds! They appreciate it more than us, don’t they?’*

I: *‘Do you every see them?’*

P1: *‘Oh aye, you see ‘em, don’t you, flyin’ o’er. Birds, in the sky.’*

.....

'It's nice sat. It's a nice little spot this. It's a lovely little spot you know, if you want to do a bit o' sunnin'.'

P2: *'This is fair weather in't it?'*

P1: *'Nice to get into it, in't it, for a change now and then...It's nice this little garden in't it? It's lovely.'*

P2: *'Here...outside? Do you good you know....this.'*

P1: *'Oh, it does yeah. Look at them with their big hats on. Keep sun out of their eyes. It'll do us good sat out here, won't it?'*

The following is from an interview with a resident and her daughter about married life:

P: *'Anyway we finished up bought an allotment...to get us out. We use to go over there for days at a time, didn't we?'*

C: *'Mmm, 'cause at that time you didn't have a garden at your house, did you?'*

P: *'We hadn't a garden at our house, it were like one back and front and no garden, and he said, "I'm going to get a garden," and we did...at Rivelin. We use to spend some lovely days up there, didn't we?'*

C: *'And you used to go fishing...'*

P: *'Fishing...oh, fishing, yeah.'*

I: *'Do you like that?'*

P: *'I don't but he did. But I like to sit at side and watch... I use to take a library book, cause I've always been in't library. I use to take a library book and sit at side of him and I'd read and he'd fish.'*

C: *'And you did use to watch things, and then have a little walk...'*

P: *'Cause my husband could walk miles. He'd say, "come on, we'll go up Rivelin, up to top of Rivelin." And off we'd go.'*

But nature was also identified as unpleasant when physical comfort was compromised. Participants who were frail, perceived cold and draughts more acutely. Discomfort was often endured by some people because they did not want to inconvenience anyone:

I: *'Are you cold?'*

P: *'I'm perished...but don't shout for anything.'*

Conversely, if participants were outside they often experienced it as being too hot. Being too cold or too hot, or believing it will be, was a common theme. This is a carer's account:

C: *'It depends on the weather a lot, don't it, because a lot of residents won't move if it's cold. You know, they want to stay where they are. If it's a nice, bright day... it makes a big difference. It's more enjoyable, in't it? I mean..., going out in the rain is not nice, but if it's a lovely day they enjoy it a lot more'*

There seemed to be nothing specific to dementia that inhibited the participants from *identifying* nature as enjoyable, or for the carers to identify nature as being enjoyable for the person with dementia they cared for. Issues were around *actual* enjoyment.

C: *'Mum's...said, "Right, when you've gone I'm going to go a long walk. I don't care where I go," she says, "but I'll finish up somewhere..." I know she won't, but sometimes we've walked up here and we've said, "Will you come out here a bit and have a walk?" "It's cold today, ain't it? I'm not going out there," and come back in...this is the whole thing...she said she'd go out...'*

C: *'In the summer we'd go on holidays together and it'd always be my dad that'd get the cricket bat and tent. Dad was a great swimmer... it was a big part of our holiday fun and it is now with my boys...always went on holiday next to the sea...but not any more...'*

C: *'A lot of residents do like to go out... because a lot feel they're closed in.'*

Evidence of the feelings of people with dementia about connection to nature tended to be overheard during moments of observation, rather than data given during an interview session, as participants rarely complained about the conditions of their care. Here are a few examples of comments from residents:

P: *'It's a beautiful day in't it? Could have been paddling us feet. It's not fair. We should have been outside somewhere...up Rivelin.'*

.....

P: *'Wonder why they aren't taking us out? We use to always be doing something.'*

From the data a definition of 'nature' and consequently 'connection to nature' in terms of this personal enjoyment was constructed. For this thesis research, the following definitions apply:

Nature - plants, animals, earth, water, sun, sky, air, season and climate.

Connection to Nature - sensory enjoyment of 'nature' as defined above.

The findings also included these nature-based experiences from three different perspectives: as related by family carers, professional carers and the people themselves. The mixed-method approach provided a rich data set including insight into daily life as well as self-reports from the participants themselves – not just what they said but what they did. Many factors (personal, formal care, social network and spiritual & cultural aspects) were identified as enabling or challenging the person's success in these activities. The observational data and the mixed method approach allowed these factors to be revealed. The study also identified categories of remembered or imagined activities as opposed to merely actual ones. These aspects shed a surprising light on the third research question - *Do they feel their lives today in residential care lack a connection to nature?* There were two sets of responses to this question. As shown above, some residents expressed a desire for connection to nature that care in the home may or may not have been providing. They also could have been going out on trips and then forgetting about it the next day. A second response to the question, and the most predominant response, was that from the perspective of the person with dementia, they often felt they were still doing activities they have always loved – going for a daily walk, playing cricket with the grandsons or gardening. Data from carers and observations confirmed that in actuality they were no longer able to do these things. However, some people with dementia remained convinced that they were still doing and enjoying doing such things.

This was a contested area of discussion if the family carer was present and wanted to *'bring them back to reality.'* This finding is interesting because of the philosophical questions it raises. If the person believes they have a connection to nature and the study

is concerned with the well-being of the participants then whose reality is real? The research question asked 'do they feel,' not 'does the carer or the researcher feel.' So that would have to be answered 'no, they don't feel they lack a connection to nature.' In retrospect, the question should have been, *Do they lack a connection to nature?* The significant finding then is that they do in many ways lack such a connection, but do not feel that they do, according to the activities and sensory stimulation they reported.

When the general types of activities involving nature were considered according to the input domains of sensory stimulation (Table 1.3) it showed that connection to nature occurred during activities done alone (3.0) were possible more often than those done with others (4.0) or going out (6.0). This category of sensory stimulation (3.0) had the most potential for still being enjoyed, given that it did not require the help of others or the ability to leave the home. In other words, this group of stimulation had the most potential for being enjoyed independently. It also involves the building in affording the stimulation and in moderating the person's exposure to it. In summary, this category seemed to be the most affected by both the building attributes and the person's abilities and therefore will be considered further in the next studies.

Study One was successful in terms of investigating the built and the social environment. Elements or factors both human and physical were identified which impacted nature-related activities while indoors, outdoors or going off the site. That this study used a mixed-method, ecological approach gave a level of examination impossible by interviews or focus groups alone, separated from the space under inquiry.

The main limitations of Study One are that it is a very small sample in similar homes owned by the same company in the same city, and so the results are not generalisable, although the findings do seem to represent universal truths about the types of activities that older people enjoy. Limitations also include the fact that focus group data were biased towards carers' personal experience or agenda; data were affected by group dynamics in the sessions; and during one focus group the tape recorder malfunctioned due to researcher error, and the data relied on written notes made during and immediately after the session.

Overall the findings from Study One confirmed the complexity of the residential care environment and the multiple factors challenging nature-related activities as well as limiting the residents' ability to achieve a sensory connection to the natural world. It was shown that human factors such as involvement from family and professional carers and the abilities of the person with dementia themselves play a critical role. The building and its surrounding landscape and neighbourhood were shown to play a determining role in outdoor activities and trips into the local area. The construction of the rooms and windows affected the permeability for natural elements to enter interior spaces, and as a result played a role in the daily stimulation available to the person from views, fresh air and daylight.

From the analysis of sensory domains, it is possible to see that connection to nature through sensory stimulation can pervade one's day to day life while indoors or outdoors, through daily routines as well as special events. Walking was an important component of indoor and outdoor activities as was visual stimulation. Seeing and moving (either walking or other modes of travel) provide visual contact with nature as well as a change in view content facilitated by movement into and through spaces. The role of other people or animals is an optional impetus that does afford and often prolong contact with natural elements. Activities that provide for essential aspects of personal economy and physiological welfare such as going shopping or to the post office also provide the stimulus for being outdoors. A necessary activity such as walking the dog provides the stimulus for routine outdoor exposure and physical exercise, which could be positive depending on the weather. There are also many factors arising in terms of the neighbourhood, including physical proximity to local services, amenities and infrastructure, such as shops, pavements and transport. Closer to home, the provision of gardens, steps, paving and seating in one's own property are implied by several of the domains. The nearness of and access to neighbours and friends play a role in either initiating or perpetuating many stimuli. Most of these activities mentioned in this paragraph are beyond the reach of most people in residential care homes.

In terms of the spatial, social and factual domains, although several participants indicated that they believed they still participated in nature-related activities, it was clear from observations confirmed by staff and family carers that they were actually not still participating in them. On the domain of 'doing by myself - with stimuli,' relatives

acknowledged that the person was no longer able to participate in gardening activities while living in the care home. Other activities they used to enjoy which involved being outside the home were severely limited. Relatives and staff reported that staff were too busy and had too much to do to take people out. The home with the upper EMI unit was particularly limiting in terms of trips outside the building into the garden for residents. For the domain of ‘doing with others – people or animals’ swimming and caring for a pet were no longer possible. For the domain ‘going out’ most of the enjoyed activities were no longer possible. Residents were still able to enjoy occasional day trips or pub visits either with a relative or organised by the home. One family member when asked what would improve quality of life:

C: *‘Make sure everybody got outside once a day.’*

Nature was clearly valued but equally lacking in the day to day lives of residents, according to carers. Residents themselves did not report a lack of nature in their lives in the care home because they felt they were still involved in such activities. The reality therefore was that their lives were depleted of much of the natural stimulation and nature-related activities they had reported as enjoyable to them – but they did not seem to be aware of this lack, according to their comments when questioned about it.

1.4 IMPLICATIONS AND FURTHER RESEARCH

The fact that nature was enjoyed in various ways by the participants contributes to the growing body of evidence mentioned in the literature review. The implications for design are primarily that to ignore the connection to nature that a person with dementia is able to achieve in a residential environment is to diminish their well-being. In terms of independent enjoyment of nature, activities the person enjoys on her/his own, not requiring carer support, are largely enabled or challenged by aspects of the building, and the extent to which this is so, is dependent on the person’s level of physical ability. The findings also showed that the family and professional carers play an important role in many activities which enabled the person to maintain a connection to nature. Their efforts at times overcame the disabling effects of the physical environment. Therefore the main implication of Study One is that carer involvement and the physical attributes of the built environment must each contribute to affording a connection to nature to the

person with dementia if that person is to be enabled to participate in activities they have identified as enjoyable, either alone or with others.

The methodology for Study One required that people with dementia be interviewed as well as carers. Observations were also carried out in the homes. There are several implications for research. First, it was shown to be possible to interview people with dementia, strengthening the arguments of Bond and Corner (2001) made earlier. Second, the data obtained is not only rich but it may conflict with proxy account. Often the service user data and the proxy account differed. This must be taken into consideration in the interpretation of the findings. Third, use of triangle conversations with people with dementia produced rich data by enabling discussion to develop between people of similar socioeconomic as well as cultural backgrounds.

The one experience Study One failed largely to capture was the participants' actual enjoyment of nature during moments of sensory stimulation. Such engagement with natural stimuli, if used for creative expression, might provide therapeutic benefit given the evidence in the literature review on social and therapeutic horticulture.

1.5 CONCLUSION

The literature review on the benefits of nature as well as the findings from Study One confirmed, at least on a very small scale, that having a connection to nature is important to people with dementia. Also, within residential care settings many of the ways of enjoying nature are now compromised through a combination of the person's dementia, the care practices, the social network, the physical environment or cultural aspects. One set of activities identified through an interactivist analysis had the potential to be enjoyed independently if facilitated by the building and if the person's physical ability afforded them access to the stimuli. The category of 'doing by myself with stimuli' could potentially be the most challenged or enabled by aspects of the building.

The key findings from Study One are thus:

- Nature was identified as enjoyable to the people with dementia participating in the study, both from self report and proxy report
- Enjoyment was gained from both nature-based activities and sensory stimulation

- Enjoyment recounted may have been actual, remembered or imagined
- The residential care environment is complex and multiple factors challenge nature-related activities and the residents' abilities to receive sensory stimuli
- A person's connection to nature was enabled or challenged by aspects of the person, formal care, social network, spirituality and culture & aspiration
- A person with dementia may have a 'time frame identity' (for instance that they are in school) which seems to be reinforced by the physical/social environment
- Human factors such as involvement from family and professional carers and the abilities of the person with dementia themselves play a critical role
- The presence of other people or of pets and animals affords and often prolongs contact with natural elements
- Going outdoors and participating in outdoor activities such as gardening or pottering which were enjoyed regularly in the person's own home were largely no longer possible in the care home
- Nature was valued but lacking in the day to day lives of residents according to carers, but some residents felt they were still participating and enjoying it
- Family and professional carers play an important role in enabling a person with dementia to maintain a connection to nature by overcoming obstacles

Given these findings and the methods used to obtain them, it seems possible to examine more widely a group of dementia care settings to determine their potential to challenge or enable a connection to nature for the residents living there. This study was instrumental in supporting the need for, and the design of, Study Two which will systematically evaluate and compare different dementia care environments. The results of this ecological investigation can now contribute to the development of a purpose-built assessment tool for this evaluation.

1.6 SUMMARY

This chapter has addressed the first overall aim of the thesis: to determine if and in what ways 'nature' was enjoyable to people with dementia. First, the literature supporting connection to nature for people generally, and of benefit to people with dementia particularly, was presented. The areas included were 'green' nature or wilderness, daylight, home gardens and gardening, access to neighbourhood and therapeutic

horticulture/therapeutic landscapes. Secondly, specific ways in which nature was important were elicited from participants through a mixed-method approach, collecting rich data from self-reporting of their personal experiences as well as from observation in the homes. As expected, they identified nature in terms of pleasant sensory stimulation, for example from sunshine, breezes and smells in the garden. Nature was not always experienced as pleasant. Some people expressed thermal discomfort from draughts while inside or by simply being cold while outside. This was more often the case with very frail residents. They also identified nature in terms of activities involving plants and animals either indoors or outdoors, with others or alone. Definitions for 'nature' and having a 'connection' to it were constructed from the study results.

The key advances from Study One are thus:

- Definitions for 'nature' and 'connection to nature' were constructed based on enjoyment identified by people with dementia directly and their carers
- An ecological investigation of the person within the care setting highlighted the roles of both the social and the built environment in connection to nature.
- The study findings broaden and extend the current body of evidence on the importance of nature in the lives of people with dementia.

As a connection to nature contributed to self-reported quality of life for the participants, and as there were numerous barriers to maintaining such a connection, it is then possible to investigate this problem within the architectural setting. To facilitate this piece of the research, the second aim of the thesis was undertaken, 'to develop a tool to assess the potential of residential care environments to provide such a 'connection to nature.' The following chapter will first present an overview of the regulatory framework of residential care in the UK, followed by background literature on dementia care environments. It will then report Study Two which utilises a purpose-built assessment tool in a cross-setting evaluation of several different dementia care environments in order to determine their potential to provide a connection to nature for the residents.

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CHAPTER 2 – RESIDENTIAL DEMENTIA CARE ENVIRONMENTS

2.0 INTRODUCTION

The aim of this chapter is to characterise the built environment of residential dementia care in England and then to systematically compare a range of sites for their ability to provide a connection to nature for the residents. In order to compare these sites in terms of connection to nature, an assessment tool is needed. The development of such a tool addresses the second overall aim of the thesis research, ‘to develop a tool to assess the potential for connection to nature so residential care environments can be compared.’ This chapter begins by first presenting the regulatory framework within which residential care is provided in England. This overview will include a brief history of care provision, followed by current policy, regulations, minimum standards, registration and inspection, health, safety and fire regulations. Since the regulatory framework underpins the later analysis of the buildings, this overview will highlight the contribution of the regulatory framework to connection to nature for people living in residential care. A range of types of built environments commonly used for residential dementia care in England are also given, as well as published design guidance for dementia care environments. The second part of the chapter presents Study Two, a comparative study of 14 care environments using an assessment tool developed for the purpose which was based on the data and findings thus far. Study Two addresses the research question: *Do residential care buildings enable connection to nature? (How or how not?)*. The results of the study are followed by a discussion of its findings, strengths and limitations, the implications of the work, the needs for further research, and a conclusion and summary.

2.1 DEMENTIA CARE PROVISION

Section 21 of the National Assistance Act 1948, placed a duty on local authorities to provide ‘residential accommodation for persons who, by reason or age, infirmity or any other circumstance are in need of care and attention not otherwise available to them.’ It essentially ‘gave local authorities powers to arrange for the provision of accommodation within premises maintained by voluntary organisations,’ (Peace, 2003). Different from nursing homes, this Act specified ‘board and lodging’ for residential homes. It would be

twenty years later before it applied also to private sector homes (“Health Services and Public Health Act,” 1968). Guidance offered in the 1960’s and 70’s aimed provision at the more frail persons and saw the role of residential care as less social care and more health care. Furthermore, official concerns were, not unlike today, over numbers of people accommodated, development of new homes, and subsequent costs. Remarkably, in 1955, these concerns led to economies of scale and a proposal for 60-bedded homes (MoH, 1955). In 2002, 20% of people over 85 lived in residential care and nursing homes (Laing, 2002).

In April 2004, in the United Kingdom, there were an estimated 13,176 registered care homes for older people. There were an estimated 486,000 places for the nursing, residential (personal) and long-stay hospital care of older, chronically ill and physically disabled people (Laing & Buisson, 2004). The management structures of care homes can be considered in four categories as described in (Torrington, 1996):

- 1) Private homes are owned by individuals or companies. Small private homes are often owned and managed by the same person who might also live on site. An individual or company may have an expanding portfolio of larger or groups of homes.
- 2) Voluntary homes include not-for-profit homes run by charities or housing associations which may operate locally or nationally. Operators include armed service charities, religious organisations, trades and professions.
- 3) Local authority homes or former local authority homes are:

‘former Old People’s Homes, also known as Part Three homes. They are managed by the Social Services Departments of Local Authorities. Some Authorities continue to run their homes, others have transferred them to the independent sectors. The homes that have been privatised are managed by non-profit-making trusts or charities, often formed by former staff of the Local Authority. The properties are transferred on a long term lease, and the new organisation has the task of raising capital to upgrade the existing stock. Most trusts have plans for expansion’ (Torrington, 1996, p. 25).

- 4) NHS homes or homes under contract to NHS trusts have complex management structures. They may be contracted out to the voluntary or private sector or run collaboratively between the NHS trust and another organisation, like a housing association. ‘A site is made available on a long term lease... and the NHS guarantees to fill the beds at an agreed weekly fee’ (ibid., p. 25).

Local authorities were the main providers in the post war era with a few people living in owner/operated homes in the private and voluntary sectors (Peace, 2003). By 1960 in England and Wales there were 3335 residential institutions or homes accommodating 110,767 persons (Townsend, 1962). Fifteen years later there would be 195,100 places (13% private, 66% local authority, and 21% voluntary) (Peace et al., 1997). The supply of private provision increased by 82% between 1985 and 1990, overtaking demand (Higgs & Victor, 1993). The number of residential care home places for older people (including older people that are mentally ill) was 263,000 in 2000 (Laing, 2002). The number of older people in residential care homes and nursing homes combined was estimated at 375,000 in 2000 (PSSRU, 2002) and it is projected to rise by around 23% to around 460,000 in 2020 (based on no change in dependency rate (ibid.)). The Health Survey for England in 2000 showed that 70% of all people in residential care were severely disabled, with dementia being the single most cause of disability (Bajekal, 2002). Furthermore, almost half of the people tested in care homes in the Bajekal study showed signs of cognitive impairment.

With a projection of just under half a million older people in residential care and nursing homes by 2020 (PSSRU, 2002) of whom as many as half will have dementia (Bajekal, 2002), a quarter of a million people in the United Kingdom will be directly affected by nursing and residential dementia care environments.

Quality of care became the focus of research and legislation beginning in the 1960's. Residential care homes, nursing homes and dual registered homes were finally regulated in England and Wales under the Registered Homes Act 1984 (and in Scotland in 1985). This was enacted following the expansion of private residential care in the late 1970s and early 1980s and gave local authorities the duty of inspecting residential care homes. In 1987, what came to be known as the Wagner Report was published, entitled 'Residential Care – A Positive Choice' which looked into the future of residential work in England and Wales (NISW, 1988). It was intended to complement the Barclay Report, entitled 'Social workers: The Role and Tasks.' With greater recognition of inconsistencies in care practice, the Burgner Report of 1996 called for national standards in quality and regulation, followed by *Modernising Social Services* in 1998 (Department of Health, 1998).

Another change occurred in 1993 with the NHS and Community Care Act in which state funding for care homes was transferred to local authority budgets and care management was developed to assess individual need. By 1997, the Royal Commission on Long term Care for the Elderly was established and chaired by Sir Stewart Sutherland, which recommended that older people who require residential care should only pay for the accommodation costs of their care and that all social care services should be free. The Commission also recommended the establishment of the National Care Standards Commission (Social Care Association, 2005).

Today, the UK government's overall policy objective for older people emphasises the need to maintain and promote independence wherever possible, through rehabilitation and community support. Good quality care homes play a part in the variety of specialist provision and are being provided by local authority, not-for-profit/voluntary and private/for-profit companies. A definition of residential care may be stated as:

‘...a place where a person lives, normally with a degree of permanence. It need not have any institutional quality [and] can as a matter of law be accommodation at which there is not provision of board or other services, no nursing care and no personal care.’ (case of *R. v Newham LBC ex p. Medical Foundation*, 1997) quoted in (Cooper, 2002)

In April 2004, in the United Kingdom, there were an estimated 13,176 registered care homes for older people. There were an estimated 486,000 places for the nursing, residential (personal) and long-stay hospital care of older, chronically ill and physically disabled people (Laing & Buisson, 2004). There are both long and short-term residential dementia care settings in the UK. Short term stay may be for respite care which is provided ‘by a day or residential centre or by a family as much for the benefit of the carers as for the person concerned. Respite developed out of the informal arrangements made by doctors in long stay disability hospitals in the 1950s to provide breaks for families from caring for someone with a severe disability at home and so prevent an admission to long term care’ (Social Care Association, 2005).

Another short-term stay may be for assessment (to determine a person's needs prior to placement into permanent care) or for emergency overnight provision (when and for as long as needed). Both short and long-term provide 24 hour professional care plus room

and board. Residential dementia care can also be provided in conjunction with nursing care within a single facility. Previously, such homes were registered with both the Local Authority to provide residential care, and with the Health Authority to provide nursing care, and were called dual-registered homes. (There is now a single registration application.) Residents receiving residential or nursing care may live on the same corridor or in separate parts of the home. A person with dementia receiving nursing care may require nursing because of dementia, physical disabilities, frailty or complex medical needs.

Given this expanse of client needs found in residential care, as well as the range of physical abilities, the environment cannot possibly be well-suited for everybody. It may be too restrictive or not supportive enough, too stimulating or not stimulating enough. For these reasons, the ‘person-environment fit’ (Lawton, 1975) is often not a good one. People’s needs also change. In dementia this can happen quickly. So the window of opportunity in which the environment is providing an appropriate level of support is narrower, the quicker the person declines. Behavior can be seen as a function of competence in dealing with different aspects and demands from the environment (ibid.). Therefore, while there is a definite need for residential care provision, how well it addresses the needs of a person with dementia, and the success to which the regulatory framework supports practitioners’ abilities to provide good dementia care within environments ‘fit for purpose’ is of ongoing concern, especially in light of growing pressures both economically and demographically.

2.2 REGULATORY FRAMEWORK

Residential care is provided in England in accordance with the Care Standards Act 2000 (CSA) which:

- reformed the regulatory system for care services in England and Wales
- replaced the Registered Care Home Act of 1984 and associated regulations
- created the National Care Standards Commission (NCSC), an independent non-governmental public body, to regulate social and health care services previously regulated by local councils and health authorities.

- set out a broad range of regulation making powers covering, amongst other matters, the management, staff, premises and conduct of social and independent healthcare establishments and agencies.
- gave the Secretary of State of Health the powers to publish National Minimum Standards

The NCSC has since been replaced by two inspectorates as of April 2004 - the Commission for Social Care Inspection (CSCI) and the Healthcare Commission (Commission for Healthcare Audit and Inspection). CSCI incorporates the work formerly done by the Social Services Inspectorate (SSI), the SSI/Audit Commission Joint Review Team and the National Care Standards Commission (NCSC). CSCI brings together the inspection, regulation and review of all social care services into one organisation. It was created by the Health and Social Care (Community Health and Standards) Act 2003 and became fully operational on 1 April 2004. Further changes to this regulatory body are imminent.

National Minimum Standards were published by the Secretary of State for Health in accordance with section 23 of the Care Standards Act 2000 (Department of Health, 2003). Compliance with national minimum standards is not itself enforceable, but compliance with regulations is enforceable subject to national standards being taken into account. In assessing whether a care home conforms to the Care Homes Regulations 2001, the CSCI must take the standards into account, as well as other factors it considers reasonable or relevant. The CSCI may conclude that a care home has been in breach of the regulations even though the home largely meets the standards. The CSCI also has discretion to conclude that the regulations have been complied with by means other than those set out in the national minimum standards. CSCI registers and inspects all care homes and, once registered, homes are inspected twice a year to check that they are complying with these standards.

The Care Standards Act 2000 defines a care home:

“(1)...an establishment is a care home if it provides accommodation, together with nursing or personal care, for any of the following persons.

- (2)They are-
- (a) Persons who are or who have been ill;
 - (b) Persons who have or have had a mental disorder;

- (c) Persons who are disabled or infirm;
- (d) Persons who are or who have been dependent on alcohol or drugs.

(3) But an establishment is not a care home if it is-

- (a) A hospital;
- (b) An independent clinic; or
- (c) A children's home,

Or if it is of a description excepted by the regulations.” (CSCI, 2003)

Although the standards were amended and they come into force from June 2003, the statutory regulations with which care homes must comply remain unchanged.

2.2.1 **THE CARE HOMES REGULATIONS 2001** (reprinted in 2002)

2.2.1.1 **REGULATIONS RELEVANT TO CONNECTION TO NATURE**

Sections of the Care Homes Regulations with relevance to connection to nature are presented here.

Part IV - PREMISES (pages 66-67) (Department of Health, 2002)

23. Fitness of premises

- (2) (a) the physical design and layout of the premises to be used as the care home meet the needs of the service users;
- (f) the size and layout of rooms occupied or used by service users are suitable for their needs;
- (g) there is adequate sitting, recreational and dining space provided separately from the service user's private accommodation;
- (h) the communal space provided for service users is suitable for the provision of social, cultural and religious activities appropriate to the circumstances of service users;
- (i) suitable facilities are provided for service users to meet visitors in communal accommodation, and in private accommodation which is separate from the service user's own private rooms;
- (o) external grounds which are suitable for, and safe for use by, service users are provided and appropriately maintained;

2.2.2 **NATIONAL MINIMUM STANDARDS** for Care Homes for Older People

The National Service Framework for Older People (Department of Health, 2001) set out a programme of action and reform as part of the UK government's agenda to 'drive up standards and reduce unacceptable variations in health and social services.' Under this framework, National Minimum Standards were introduced for care homes for older

people from 1 April 2002 (and amended from June 2003)(Department of Health, 2003), which:

- are core requirements for the care of older people across health and social services, and apply to all care homes providing accommodation and nursing or personal care for older people.
- apply to homes for which registration as care homes is required.
- acknowledge the unique and complex needs of individuals, and the additional specific knowledge, skills and facilities needed in order for a care home to deliver an individually tailored and comprehensive service.
- apply whether a person is being cared for at home, in a residential setting or in a hospital.
- do not apply to independent hospitals, hospices, clinics or establishments registered to take patients detained under the Mental Health Act 1983.

While the standards are qualitative, regulators look for evidence that the requirements are being met and a good quality of life is being enjoyed by service users. This is done through discussions with service users, families and friends, staff and managers; observations in the homes and scrutiny of written policies, procedures and records (p. ix). The following cross-cutting themes underpin the drafting of the National Minimum Standards for Care Homes for Older People:

- Focus on service users
- Fitness for purpose
- Comprehensiveness
- Meeting assessed needs
- Quality services
- Quality workforce

The standards focus on achievable outcomes for service users and are grouped by the 7 main topics below. Each topic is prefaced by a statement of good practice, which sets out the rationale for the standards to follow. The 7 Topics are:

1. Choice of home
2. Health and personal care
3. Daily life and social activities
4. Complaints and protection
5. Environment
6. Staffing
7. Management and administration

2.2.2.1 STANDARDS RELEVANT TO CONNECTION TO NATURE

The parts of the care standards relevant to this research are quoted below. They reflect the amendments and are therefore accurate as of June 2003.

(Topic 1) Choice of Home (Standards 1 – 6)

‘If the home says it provides for the needs of people with dementia, it will have to make clear in the prospectus how this is done – for example, small group living and structured activities, with décor and signage helpful to people with dementia’ (Department of Health, 2003)

(Topic 5) Environment (Standards 19 – 26)

‘The onus will be on proprietors to make clear which clientele their homes are aimed at and to make sure the physical environment matches their requirements...Although the physical character of homes will vary, there are certain standards of provision common to all homes which must be met’ (p. 25). These are listed under:

- 19 Premises
- 20 Shared facilities
- 21 Lavatories and washing facilities
- 22 Adaptations and equipment
- 23 Individual accommodation: Space requirements
- 24 Individual accommodation: Furniture and fittings
- 25 Services: Heating and lighting
- 26 Services: Hygiene and control of infection.

Standard 19 ‘Premises’ addresses the outdoor environment by stating the outcome that ‘service users live in a safe, well-maintained environment’ (ibid. p. 26).

Standard 19.1 ‘The location and layout of the home is suitable for its stated purpose; it is accessible, safe and well-maintained; meets service users’ individual and collective needs in a comfortable and homely way and has been designed with reference to relevant guidance’ (p. 26).

Standard 19.3 ‘Grounds are kept tidy, safe, attractive and accessible to service users, and allow access to sunlight’ (p. 26).

Standard 20 ‘Shared Facilities’ has the stated outcome that ‘service users have access to safe and comfortable indoor and outdoor communal facilities’ (p. 26).

Standard 20.1 ‘In all newly built homes and first time registrations the home provides sitting, recreational and dining space (referred to collectively as communal space) apart from service users’ private accommodation and excluding corridors and entrance hall amounting to at least 4.1sq metres for each service user.’

Standard 20.3 'There is outdoor space for service users, accessible to those in wheelchairs or with other mobility problems, with seating and designed to meet the needs of all service users including those with physical, sensory and cognitive impairments' (p 27).

(Topic 7) Management and Administration (Standards 31 - 38)

Standard 38 'Safe Working Practices' states the outcome that 'The health, safety and welfare of service users and staff are promoted and protected' (ibid. p. 42).

Standard 38.3 'The registered manager ensures the health and safety of service users and staff including: security of service users based on an assessment of their vulnerability' (p. 43)

The National Minimum Standards have been briefly introduced and those that are relevant to connection to nature have been quoted. Standards 19 and 20 contain recommendations for usage of the outdoors and Standard 38 ensures the safety and security of staff and users. Standard 38.3 is specific to people with dementia as vulnerable users.

2.2.3 REGISTRATION

In 1927 the Nursing Homes Registration Act set down the first registration procedures from which others continued to evolve. Subsequent amendments related to the delegation of power for registration and inspection, the types of regulated premises and the qualifications of staff and managers. All care homes must now be registered with the CSCI in order to operate lawfully under the Care Standards ACT 2000. The registration process is about the organisation or the person registering with only minimal information given about the actual care environment. The previous system, where homes offering both residential and nursing care had to obtain dual registration from the local authority inspection unit and the health authority, has been replaced with a single application process (Cooper, 2002). If the owner and the manager are not the same person, both must apply for registration. The application contains information about the *responsible provider* and the *responsible manager* as well as proposed charging scales, details about proposed staff, location and details of the accommodation including security arrangements, and details about the users it is intended to serve. Any sections of the legislation relevant to connection to nature are listed below.

From the National Care Standards Commission (Registration) Regulations 2001

PART II - APPLICATIONS FOR REGISTRATION:

SCHEDULE 1 Regulation 3(2)(a) and (5)
INFORMATION TO BE SUPPLIED ON AN APPLICATION FOR
REGISTRATION AS A PERSON WHO CARRIES ON AN
ESTABLISHMENT OR AGENCY

Information about the establishment or agency

7. A statement of purpose of the establishment or agency.
8. A statement as to the accommodation, facilities and services which are to be provided by the establishment or agency including the extent and, where appropriate, location of such accommodation, facilities and services.
11. In respect to the premises to be used by an establishment –
 - (a) a description of the premises, including a statement as to whether they premises are purpose-built or have been converted for use as an establishment;
 - (b) description of the area in which the premises are located.
12. In respect of the premises to be used by an establishment or for the purposes of an agency, a statement as to whether at the date the application is made the premises are capable of being used for the purpose of –
 - (a) achieving the aims and objectives set out in the statement of purpose of the establishment or agency; and
13. A statement as to the security arrangements, including arrangements for the purposes of –
 - (b) restricting access from adjacent premises or, when the premises form part of a building, from other parts of the building.

SCHEDULE 4 Regulation 3(4)
INFORMATION TO BE SUPPLIED ON AN APPLICATION FOR
REGISTRATION IN RESPECT OF A CARE HOME

2. Details of the accommodation available for –
 - (a) service users; and
 - (b) persons working at the care home.
3. Whether it is proposed to provide nursing care at the care home.
5. The maximum number of service users for whom the care home is proposed to be used, and the number of such users by reference to –
 - (a) their sex;
 - (b) the categories of old age (if not falling in any other category, with a special category of those also over 65); mental disorder past or present; etc.

Registration requirements have been briefly introduced and those relevant to connection to nature have been quoted.

2.2.4 HEALTH, SAFETY AND FIRE REGULATIONS

This section reviews the regulations generally for health, safety and fire within residential care homes in terms of those with any impact on connection to nature. It focuses largely on the fire safety regulations which impact the building itself. The Residential Care Home Regulations 9(2) specify that care plans must contain risk assessments with written details of any risk-taking or curtailment of action that is agreed by the home, professional staff and resident. Through the mechanism of a risk assessment, activities in the home such as cooking, gardening or use of the Snoezelen Room are made available to residents, even if there is a danger associated with the activity. The Health and Safety at Work Act specifies that managers and staff understand their roles in ensuring health and safety; that the home is a safe environment for residents living there and for staff working there. The Food Safety Act 1990 ensures that the main kitchens be registered with the local Environmental Health Department and comply with guidance and advice. Also, the Food Safety Regulations 1995 require that staff involved in the preparation and handling of food must be trained in food hygiene and comply with the Food Safety Act 1990 and its regulations. The outcome of these regulations is that food is prepared, stored and cooked safely and hygienically, that residents meet no hazards and are provided with safely prepared food.

Legionella is a type of bacteria which is common in natural and artificial water systems. They can survive at low temperatures and thrive at temperatures between 20°C and 45°C. They are killed at higher temperatures and this is the main method used for their control in domestic water systems. *Legionellosis* is the name given to a group of pneumonia-like illnesses caused by *legionella* - the most serious and well-known being Legionnaires' disease. Legionnaires' disease is serious in elderly and infirm patients; pneumonia is a common cause of death in people over 70. Infection is caused by breathing small droplets of water contaminated by the bacteria. Anyone can get infected but those most at risk include elderly people, smokers, alcoholics, and those suffering from cancer, diabetes, chronic respiratory disease or kidney disease. Under the Health and Safety at Work etc Act 1974 care homes have a duty to consider the risks from *legionella* that may affect people in their care. The Control of Substances Hazardous to Health Regulations 1994 specifies that the risks to all staff and residents from bacteria like *legionella* be assessed and suitable precautions are taken (HSE, 1997).

To minimise the growth of *legionella*, store hot water above 60°C and distribute it at above 50°C. The bacteria is susceptible to Ultraviolet radiation (UV) so alternatives to minimise the growth include ionisation, UV light, chlorine dioxide, ozone treatment or regular thermal disinfection of the system (HSE, 2000). While this bacteria presents a danger only as far as interior plumbing is concerned, there exists the perception among some care practitioners that exterior water features may also be dangerous, resulting in a hesitation to install and use water features in outdoor landscapes. This is generally an unfounded fear that persists none the less.

2.2.4.1 FIRE SAFETY

In England, a number of Government Departments deal with fire safety policy, legislation and its enforcement. Those principally concerned are the Office of the Deputy Prime Minister and, because of their responsibility for building regulations, the Building Regulations Division of ODPM. The main fire statutes relevant to care homes for which the Home Departments have responsibility are the Fire Services Act 1947 (FSA) and the Fire Precautions Act 1971 FPA. Before issuing a certificate the fire authority must be satisfied about the following points:

- 1) the means of escape in case of fire with which the premises are provided;
- 2) the means for securing that at all material times the means of escape can be safely and effectively used. These may include such measures as the protection of escape routes by fire-resisting construction, the provision of exit and directional signs and lighting, including safety lighting on escape routes;
- 3) the availability of suitable means for persons in the building to fight fire; and
- 4) the availability in the premises of suitable means for giving persons warning in case of fire.

The main legislation in connection with which fire authority inspectors are likely to carry out inspections are the Registered Homes Act 1984, the Residential Care Homes Regulations 1992 and the Building Regulations 1991. The Building Act 1984 is the enabling act under which the Building Regulations have been made. The Secretary of State, under the power given in the Building Act 1984, may for any purposes of:

- securing the health, safety, welfare and convenience of persons in or about buildings and of others who may be affected by buildings or matters connected with buildings;
- furthering the conservation of fuel and power;
- preventing waste, undue consumption, misuse or contamination of water
- make regulations with respect to the design and construction of buildings and the provision of services, fittings and equipment in or in connection with buildings.

The current regulations governing fire safety are the Building Regulations 2000 Approved Document B with 2000 and 2002 amendments, replacing the 1992 regulations, and available from HMSO. Supplemental to this is the ‘Draft Guide to Fire Precautions in Existing Residential Care Premises’ published in January 1983 (but still the authoritative document as of April, 2006). The Draft Guide and Document B together constitute the primary guidance concerning residential care buildings, designated as purpose group 2a. Concepts that affect connection to nature are organised and discussed below with the relevant numbered guidelines explained and referenced from these two documents.

Materials

Fire resistance

1.1 – ...’much will depend upon the fire resistance of the structure and the rate at which fire can spread across the surfaces of walls and ceilings.’ (Home Office, 1983, p. 4).

Fire resistant surfaces and structures are required to limit the spread of fire. Non flame-retardant treated timber or hardboard is only acceptable on small areas of wall surface. Flame-retardant woods are acceptable on walls and ceilings in small rooms and in other rooms for small areas.

Impact - Natural materials such as wood on walls, floors and ceilings are limited in use.

Air flow

Fire / Smoke spread

1.4 – ‘it will be necessary to safeguard the means of escape against the spread of fire, or of smoke and hot gases from a fire by way of ducts, pipework, chutes, trunking, roof

and other voids, cavities, shafts, openings in floors, disused chimney flues, etc.’ (Home Office, 1983, p. 5).

1.5 – ‘fire-tight seals should be made.’ (Home Office, 1983, p. 5)

Impact - This requirement effectively renders the building airtight and eliminates air circulation other than centralised heat and ventilation systems or the opening of windows and doors.

Protected area, lobby or route; distance of travel and enclosure of stairs

2.2 - ‘In the parts of residential care buildings used for sleeping accommodation, particularly for less mobile persons, the most satisfactory standards of fire safety will be achieved by dividing the building (or part) into protected areas thus permitting a fire evacuation procedure in which, initially, persons can move horizontally from the affected area to an unaffected area on the same level where they can remain in relative safety for a time’ (Home Office, 1983, p. 6).

2.3 - Such a requirement may involve ‘the provision of additional sub-dividing structures’ (ibid.). In remodelled homes this requirement has led to the construction of protected stairwells and the enclosure of all rooms on corridors by installing doors and partitions. These adaptations bring older homes into compliance because areas now fulfil the requirements for a protected area, lobby or route.

2.6 – Measuring distance of travel - Minimum distances of travel are suggested when assessing means of escape and the protected areas are situated to accommodate distance from any point in the home to a final exit or another protected area. For ‘sleeping areas where persons of any age are dependent on the assistance of staff to escape’ the maximum travel distance from any point for escape in more than one direction is 18 metres. The maximum travel distance from any point for escape in one direction only is 9 metres (ODPM, 2004, p. 37).

2.25 – ‘All stairways should be separated from the remainder of the building by fire-resisting construction and by fire-resisting doors’ (Home Office, 1983, p. 11). Stairways must be enclosed with doors and partitions.

Impact - The impact on connection to nature has been a segmentation of the living spaces into discrete enclosures with no open-plan arrangements or free flow of space from one room or area into another. This effectively reduces the flow of fresh air and daylight throughout the internal areas. In particular, stairways leading off entrances and

lobbies no longer draw fresh air up and through the home (Figure 2.1.b). Travel distance requirements determine how far apart the protected areas, lobbies or routes occur. For residents with dementia and physical disability this travel distance is less than for less dependent clients. Due to the requirements for maximum travel distances, entire stairwells have been added to existing buildings to bring them up to code. Figure 2.1 (a) shows a three storey protected stairway which was added to an existing building. The effect of this structural addition to the six adjacent bedrooms has been an impact on the patterns of fresh air and daylight into the rooms as well as the extent of view out of the windows. Furthermore, from the inside, the stairwell allows no daylight or air flow into the adjacent internal corridor, as the windows are shaded to reduce heat build-up and the stairwell is enclosed with a fire door leading onto the corridors of each floor.

Figure 2.1 **Impacts of fire regulations** on building design and connection to nature



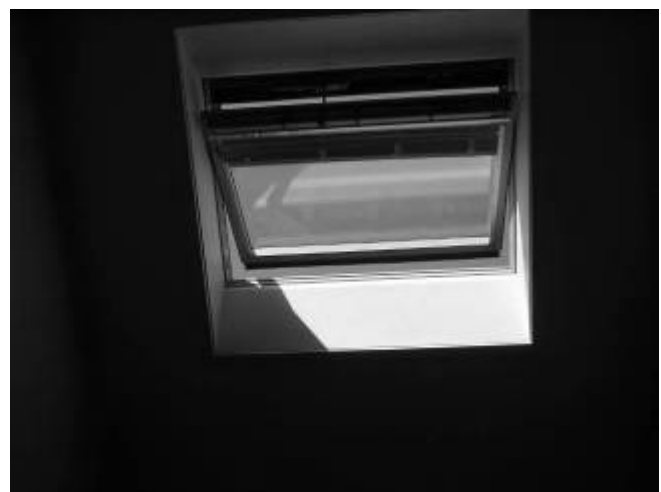
a) Addition of a protected fire stairwell



b) Enclosed stairwell



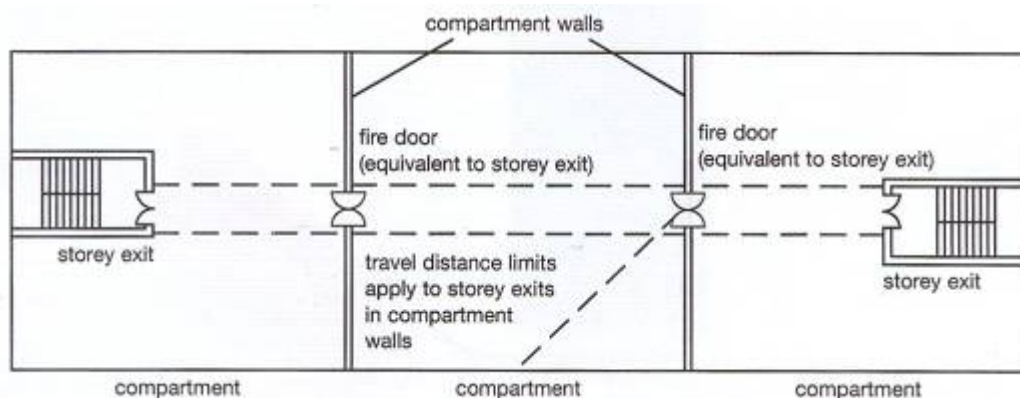
c) door & partition close off air flow from adjacent areas



d) Remote controlled skylight in stairwell

The Draft Guide is ‘intended to be used as an indication of the general standard to be aimed at rather than as a set of measures to be rigidly applied...’ (p. 2). In the case of a purpose built home a remote controlled design adaptation was found within a protected stairwell which brought both daylight and fresh air into the space (Figure 2.1.d). As with the Draft Guide, the Building Regulations 2000 also stipulates that there may be alternative ways of achieving compliance and that there is no obligation to adopt any particular solution. However, design innovations are more the exception than the norm. Figure 2.2 is representative of the compartmentation care homes are required to have. Dividing up the interior corridor spaces, while essential in terms of containing the spread of fire also in effect reduces the passage of light and ventilation between compartments and therefore within the home. This is offset in some homes by the allowed use of a fusible link, an automatic release mechanism or a door closer delay device (ODPM, 2004) which holds doors open. Relevant performance of glazed elements on an escape route must also be met with cost implications if the use of fire-resisting glass is desired. Compartmentation also facilitates security as segments of homes can be easily secured with keypad entries. Such precautions are done in the interest of safety and security of residents on an EMI unit. They also in effect limit the residents’ ability to freely move on and off the corridor. If the corridor is on an upper level, residents are in effect prevented from independently going outdoors.

Figure 2.2 Fire safety diagram showing progressive horizontal evacuation and the resulting compartmentation (ODPM, 2004) (Section B1, Page 42).



‘The concept of progressive horizontal evacuation allows progressive horizontal escape to be made by evacuating into adjoining compartments, or sub-divisions of compartments...the object is to provide a place of relative safety within a short distance, from which further evacuation can be made if necessary but under less pressure of time’ (Section 4.31, p. 42).

Compartmentation

‘The spread of fire within a building can be restricted by sub-dividing it into compartments separated from one another by walls and/or floors of fire-resisting construction. The object is two-fold: a) to prevent rapid fire spread which could trap occupants of the building; and b) to reduce the chance of fires becoming large...’ (Section 9.1, page 65)

2.2.5 CARE PROVISION AND TRAINING

Caring for people with dementia is a specialised skill requiring ongoing training and support. Issues affecting recruitment and retention rates of care staff include pay scales, job satisfaction, training requirements and labour shortages. Training of staff is dominated by the NVQ system in the UK which dictates requirements for training, qualifications and rates of paying in accordance with attainment of NVQ levels. Numerous publications address the needs of dementia care staff (Archibald, 1997). Under the theme of 'quality workforce' in the National Minimum Standards, it states that 'competent, well-trained managers and staff are fundamental to achieving good quality care for service users. The National Training Organisation for social care, TOPSS, is developing national occupational standards for care staff, including induction competencies and foundation programmes. In applying the standards, regulators look for evidence that registered managers and staff achieve TOPSS requirements and comply with any code of practice published by the General Social Care Council' (Department of Health, 2002).

In the National Minimum Standards the following apply to staffing:

Standard 28, Qualifications, states the outcome that 'service users are in safe hands at all times.'

Standard 28.1 A minimum ratio of 50% trained members of care staff (NVQ level 2 or equivalent) is achieved by 2005, excluding the registered manager and/or care manager, and in care homes providing nursing, excluding those members of the care staff who are registered nurses.

Standard 28.2 Any agency staff working in the home are included in the 50% ratio.

Standard 28.3 Trainees (including all staff under 18) are registered on a TOPSS-certified training programme. (Department of Health, 2003)

Standard 30 Staff Training, states the outcome that 'Staff are trained and competent to do their jobs' (p. 35). Standards 30.1 through 30.4 address aspects of the training & development program, time frame, course content and paid training days.

Homes often employ an Activities Director or Coordinator to plan and carry out an activities program for the residents. Whether or not these activities involve nature is left to the skills and interest of the person employed. It is largely dependent on the available

outdoor amenities at any given home. Individual staff members have been observed introducing nature into the homes. Specifically, a staff member with a natural ‘green thumb’ will see that indoor plants are watered and seasonal plants are grown outdoors. A relative of a resident may also be involved with gardening activities. Short of individuals taking an interest, involving residents with nature is not a routine part of staff training in residential care.

2.2.6 INSPECTION

The Commission for Social Care Inspection conducts roughly one announced and one unannounced inspection visit to registered establishments every year – more often if there is cause for concern. Inspections are used to ensure that services meet the standards and the needs of people using the service, and also that requested improvements have been carried out. A major focus of the inspection is ‘whether the service user is being offered the lifestyle, choice, participation and appropriate health or social care to meet their needs.’ CSCI ‘is committed to ensuring that people who use social care services are receiving a good quality of care and that their welfare and rights are properly safeguarded at all times.’ They inspect against the regulations and the National Minimum Standards ‘to ensure that your service users are kept safe from harm, and that the care they receive is of the best possible quality’ (CSCI, 2005). The inspection reports are made public on their website.

The role of inspection is to assist the registered persons in providing care to standard levels which support their statement of purpose. There is some flexibility built into the ways that statement of purpose can be achieved, in terms of the regulations and the standards.

The inspection process in terms of physical spaces often relies on the *appearance* that a certain activity occurs rather than actual observation of it occurring. For instance, to ascertain if activities occur with the residents, a cupboard full of board games would suffice as evidence, regardless of whether or not the actual space needed to facilitate such activities existed. A listing on the notice board that trips outside the home will be occurring will satisfy the standard, even if the actuality is that very few people participate, the reasons why or why not rarely are investigated.

2.3 FINDINGS OF LITERATURE REVIEW of regulatory framework

This section will discuss the findings from the review of the regulatory framework. This will be accomplished by looking specifically at three of the barriers to connection to nature that were identified during Study One. Observations taken during Study One showed for instance that there were restrictions on movement within secure settings, lack of outdoor areas with easy access, areas lacking visual access from indoors and non-priority among care staff for taking people outdoors. Also, barriers specific to maintaining a connection to nature while in the building included: double-loaded corridors with no natural light, north-facing lounges and rooms with no view to greenery or local activity. Of these barriers to connection to nature, the three that I have chosen to examine in detail here appeared to have the greatest impact on the experience of a person with dementia during Study One. The barriers are the under-usage of outdoor areas, health and safety restrictions on natural elements, and confinement within 'secure' settings as a response to 'wandering.' These three issues not only appeared in Study One, but these are enduring issues in the dementia care literature, and will now be addressed in light of the regulatory framework.

2.3.1. UNDER-USAGE OF OUTDOOR AREAS

It is commonly observed that outdoor areas in residential facilities for ageing and dementia care are often not used as much as they could be (Cohen-Mansfield & Werner, 1999; Connell, 2002; Hiatt, 1980; Troxel, 2005). This is in spite of the physical mobility of many residents, and the enjoyment they apparently derive from spending time outdoors, and from having contact with natural elements (see Chapter 1). People with dementia are uniquely challenged in their use of the outdoors. Factors affecting this include comfort, security, visual appeal, visual contact with indoors, ease of access, safety of paving and absence of physical hazards, sensory qualities, activity potential, paths and having something to watch. But design elements and quality factors alone do not appear to guarantee success, particularly as the ability to initiate independent action diminishes. Dementia care environments impose restrictions on a person's freedom to access outdoor areas as the person might if they were living at home. From this regulatory review, key aspects were identified as contributing to under-usage of outdoor

areas. From the Care Homes Regulations 2001, three aspects arose which will be addressed below.

Firstly, either the regulation is intended to avoid a negative outcome or to produce a positive outcome. Examples of both appear below.

Regulations aimed at reducing risks

- all parts of the home and activities must be free from hazards and avoidable risk....unnecessary risks must be eliminated [Part III 13(4)(a, b, c)]

Regulations aimed at fitness of premises

- design, size and layout meets the needs of the service users
- adequate sitting and recreational space
- suitable for social activities
- external grounds...suitable...and safe...appropriately maintained
[Part IV 23(2)(a, f, g, h, o)]

Secondly, since access to the outdoors was not found to be regulated (even though ‘external grounds which are suitable for, and safe for use by, service users are provided and appropriately maintained’ [Part IV, PREMISES, p. 66-67]), only parts of the home ‘to which service users have access’ must be free from hazards to their safety [Part III.13.4(a)]. Therefore the outdoor environment does not have to be kept free from hazard, and since most outdoor environments are not, the home can at their discretion ‘make proper provision for the health and welfare of service users’ [Part III.12.1(a)] by restricting access to outdoors.

In order for the home to achieve fitness of premises, external grounds must be provided which are suitable and safe. But service users are considered as a generic group with a general set of needs which apply to a person with dementia only because they are an older person, but are not written to be specifically dementia friendly. As a result of this lack of specific guidance, external grounds are not designed specifically for a person with dementia to access and use (but simply for service users generally). Consequently, some outdoor areas will not be free from hazards for people with dementia, although they may work well for older people living there. Such areas which are not dementia friendly will be closed off by management to eliminate unnecessary risk, limiting even further the accessible areas – the only areas which need be free from risk. In essence, to satisfy the requirements that areas are safe to which users have access, the solution

found in several of the homes visited is to limit the accessible areas, which may mean closing off the garden with a gate or putting a curtain over the window in the door.

During site visits to care homes over the course of the research, when the researcher questioned staff or management as to whether or not residents used the (obviously unused) outdoor areas, phrases from the regulations aimed at reducing risks were often recited. For example, during a visit to the outdoor area adjacent a dementia care corridor which is kept locked and inaccessible to residents, the researcher was shown some uneven paving and told:

C: *'They'll fall and hurt themselves so we don't let them out here on their own'*

What was unspoken but implied by this senior carer was that there was rarely ever time for him and the staff to take residents out.

Thirdly, since people with dementia are undifferentiated in the regulations from other service users, regulations apply equally to all people living in the home. In terms of the outdoor world and connection to nature, only one regulation addresses this, Part IV:23.2(o), quoted above. To rephrase this regulation inserting 'people with dementia' instead of 'service user' it states:

'external grounds which are suitable for, and safe for use by, people with dementia are provided and appropriately maintained.'

This would go far toward remedying the situation but essentially people with dementia are not considered separately from other service users.

The National Minimum Standards call for many aspects which, if they were more specific, would go far towards ensuring use of outdoor areas. They include that the home 'provide for the needs of people with dementia' and 'the physical environment matches their requirements', is 'suitable for its stated purpose..... accessible, safe and well-maintained.....grounds are kept tidy, safe, attractive and accessible to service users, and allow access to sunlight' with 'comfortable indoor and outdoor communal facilities' and 'outdoor space for service users, accessible to those in wheelchairs or with other mobility problems, with seating and designed to meet the needs of all service

users including those with physical, sensory and cognitive impairments.’ Whereas space standards specify square metres of floor space, there are no such specifications for terms such as ‘provide for the needs of people with dementia’ and no environmental standards to ensure that ‘the physical environment matches their requirements’ and it be ‘designed to meet the needs of all service users (with) cognitive impairments’.

Registration procedures require a statement as to the accommodation, facilities, location and services provided. Registration categories are restrictive by the very nature of a category for two reasons. First, they limit connection to nature generally because they require that ‘care’ be provided. A ‘Home for Older People’ was an invention of the Western world and still is a puzzlement to many people of other cultures. The very nature of care is custodial (MacDonald, 2002). The resident is disempowered by the care process in which they have little say and are given token choices. The resident no longer has freedom to control many aspects of their life, including daily routines and movement into and out of the home. This results in a lack of autonomy and a disconnection from the world outside the home. Secondly, registration categories limit the type, scope and size of the development down to it needing to be a home. There is no category for a village for instance, or for a seaside holiday resort which could include aspects of community, routine use of the outdoors and also provide some care as needed. So both the ‘care’ aspect and the ‘home’ aspect are limiting in terms of use of outdoor areas, and both are required by the registration process.

Registration procedures also require a statement about the security arrangements restricting access from adjacent premises and other parts of the building. This is rather self-explanatory. A home not planning on restricting access will not become registered. There will be implications for use of outdoor areas as a result.

Lastly, registration requires details of who the home will serve. There is no category for intergenerational living. There is a category for people over 65, for people with mental disorder or for both. To provide a home for young people would require amenities for outdoor use, since fresh air and exercise would be an expected part of a care plan for a younger person. Segregation by age efficiently eliminates such considerations.

Health and safety regulations impact use of outdoor areas profoundly. To ‘avoid and reduce risks’ to service users requires constant supervision and monitoring of residents, resulting in keeping residents seated indoors and only allowing people outside when there is sufficient staff to monitor them. (This is also a design issue because outdoor areas are not often visually accessible from indoor areas.) In the five year period up to 1998/99 there were 3,172 reported non-fatal major injuries to members of the public in care homes, with 2,448 (77%) resulted from a slip or trip (2,056 involved lost footing, 153 involved falling over an obstruction, 123 involved slipping on a slippery surface and 46 involved slipping on an uneven surface) (HSC, 2000). No distinction was made between indoors or outdoors, but the fear of falling is very real.

Building regulations for fire safety are in place to prevent the tragic consequences of fire outbreak and to contain its spread. But also, the need to provide individual fire zones partitioned off throughout the home facilitated the use of key pads and locked entry to these zones. Therefore, converting a formerly residential wing into an EMI unit is accomplished by increasing staff ratio and installing an entry alarm system on the wing. There seems from a regulatory perspective and from consultations with care providers to be no other requirements for a home, or a part of one, to become registered as caring for people with dementia. Fire regulations calling for partitioning have essentially facilitated locked corridors. Therefore, compartmentalising the home has impacted access to, and therefore use of, outdoor areas.

This section has reviewed the numerous ways the regulatory framework impacts use of outdoor areas. The following two sections turn to restrictions on natural elements and confinement as response to ‘wandering.’

2.3.2 HEALTH AND SAFETY RESTRICTIONS ON NATURAL ELEMENTS

The term ‘natural elements’ refers to elements of nature, such as plants, soil, vegetables and water. Natural elements are required if the dementia care environment is to ‘retain links to the healthy and familiar’ as well as ‘support homelike activities’ as the design guidance suggests. Normal domestic settings contain natural elements such as plants, soil, water and edible produce grown in the garden. This section will explain the impact of the regulatory framework on ‘natural elements’ such as these.

Health and safety regulations govern natural elements such as water in fountains and pools. Standing water in indoor plumbing is a health concern because it may contain water-borne bacteria such as *legionella*. This potential has been incorrectly applied to restrictions outdoors. Landscapes therefore tend not to contain waterfalls, ponds and fountains unless they are of a very limited scale and no standing water is visible. Ponds or pools are also a drowning hazard restricted by safety regulations. Although few people will have had a pond or waterfall at home prior to admission, the pleasant and soothing effects of a water feature in the landscape of a care environment may offer therapeutic benefit in the same way such features improve hospice gardens and cancer wards (<http://www.healinglandscapes.org/sites.html>) if it is properly and routinely cleaned, maintained and topped-up.

People with dementia are classified as a ‘vulnerable population’ and care environments therefore are highly ‘risk averse’, meaning that as much risk as possible must be eliminated through regulatory mechanisms. Because a person with dementia is considered unable (and in some circumstances is unable) to make decisions for themselves, the government has a ‘duty to care’ and must take the responsibility for them or bare the liability if they injure themselves. Two examples are particularly relevant to people with dementia in residential care. First, gardening poses health risks from soil-borne diseases, so the growing and consuming of foods such as vegetables is not allowed. Unlike foods from an industrial kitchen, there is no way to insure that fresh, home-grown vegetables are safe to consume. Secondly, health and safety risks concerning kitchen equipment, cookers, knives, boiling water, etc. would prohibit involvement by residents in normal kitchen activities involving peeling and cooking vegetables and baking bread. So because the equipment poses a risk, the natural elements are in effect eliminated from their day to day life.

In summary, including nature into the care home environment is sometimes in opposition to health and safety requirements for vulnerable people. But because natural elements ‘normalise’ the living environment, can prompt fond memories and can provide opportunities for pleasure, surprise and meaningful social interaction, looking for innovative ways around such restrictions results in a potentially more interesting and higher quality of life for the residents. Care Standard 38.3 states that the manager ‘ensures the health and safety (and) security of service users based on an assessment of

their vulnerability.’ This provides for risk assessments that can facilitate access to natural elements for residents, if the staff and management take the initiative, which is often the case in well-run homes offering a high quality of life for people with dementia.

2.3.3 CONFINEMENT AS RESPONSE TO ‘WANDERING’

In dementia care, the person’s need to move has been termed ‘wandering’. Whether this is ‘aimless’ is a point of debate (Marshall & Allan, 2006). What is not debateable is that this behaviour creates problems for family carers if the person still lives at home, and is one of the main reasons cited for placement in an EMI unit. Furthermore, it puts the person with dementia at risk.

“An elderly, ill clad and confused resident of a care home died from hypothermia when she wandered outside during the night. A secondary cause of death was a sub-dural haematoma perhaps caused by a fall as she left the building. The deceased was known to be in a state of mind where she was not responsible for her actions. The night was wet and windy and given her age and state of mind, the onset of hypothermia and subsequent death would have been relatively swift. She was found in the morning. The resident exited the building into an inadequately lit area. It is possible that greater illumination of the exterior would have alerted carers to the resident’s presence outside and prevented her fall. There was also insufficient care staff on duty that evening. The council have asked for improvements to internal and external lighting and night-time alarms on external doors. The coroner recorded a verdict of accidental death.” (HSC, 2000)

The requirements for registration include ‘a statement as to the security arrangements... restricting access from adjacent premises.’ This ensures that a person is not allowed to ‘abscond’ from the establishment. This regulatory requirement plays a role in limiting a person’s connection to nature if there is no safe and secure outdoor area such as a patio, or if there is no secure perimeter to the premises.

‘Wandering’ is a form of exercise and self-directed autonomy that is just now being recognised for the positive benefits it provides the person with dementia (Marshall & Allan, 2006). Free movement indoors is also a way a person can stay connected to nature. Movement within the home assists orientation to day and year through views outside and sensory stimulation from sun, light and ventilation entering the building.

The flip side to this coin is that restricting a person's freedom to go outdoors or to leave the premises, while providing safeguards, may also be in violation of human rights. The UN provides in provision 21(1) under the 'Standard Minimum Rules for the Treatment of Prisoners' that 'Every prisoner who is not employed in outdoor work shall have at least one hour of suitable exercise in the open air daily if the weather permits' ("UN Standard Minimum Rules for the Treatment of Prisoners," 13 May 1977). More recently, the Committee for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) in Europe has raised the idea that 'detaining someone because of their inability to be integrated into society, while holding them under conditions which do not give them any means of developing their capacity for rehabilitation and socialisation, can be classified as inhuman and degrading treatment' (Niveau, 2004, p. 150). There are also protections for people with mental disabilities which may apply. The World Health Organisation has as one of its ten basic principles of mental health care law Item 4, which calls for the 'provision of least restrictive type of mental health care' (WHO, 1996). Furthermore, under the United Nations Principles for the Protection of Persons with Mental Illness and the Improvement of Mental Health Care, adopted by General Assembly resolution 46/119 of 17 December 1991, states under Principle 1: Fundamental freedoms and basic rights:

5. Every person with a mental illness shall have the right to exercise all civil, political, economic, social and cultural rights as recognized in the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights, the International Covenant on Civil and Political Rights, and in other relevant instruments, such as the Declaration on the Rights of Disabled Persons and the Body of Principles for the Protection of All Persons under Any Form of Detention or Imprisonment.

A person's movement within the care home is often restrained by staff who insist the person sit down, or by actually placing people in chairs they are unable to get out of alone, such as beanbag chairs, or by placing the zimmer frame out of reach. All these are classified as abuse but carers will argue, perhaps quite rightly, that 'letting them get up and fall and hurt themselves' is neglect. Freedom of movement inside and outside the home as a response to 'wandering' is a complex moral and legal issue and cannot be tackled in this thesis. However, when confinement diminishes a person's contact with the natural world there are not only physiological consequences from sensory deprivation, but emotional and psychological consequences as well (see Chapter 1).

‘No longer being able to go out or move independently was a critical stage in identity construction. Without the wider contexts beyond or within the dwelling, the home by itself could become diminished as a source of identity construction’ (Peace et al., 2003).

Balancing rights and risk in dementia care is a complex issue and some feel the emphasis has moved too far towards risk prevention (Sheard, 2001). But evidence is growing in support of the belief that ‘a focus on safety and health requirements could be creating risk-averse environments which act against quality of life’ (Parker et al., 2004, p. 941). On emotional, psychological and ethical grounds at least, regulatory responses to ‘wandering’ among people with dementia need broad and ongoing discussion.

2.4 CONCLUSIONS OF LITERATURE REVIEW

The overall conclusions in terms of connection to nature in a residential care home, given the regulatory framework presented above, are as follows:

- 1) No legal requirement by regulation for care homes to provide access to outdoors for people with dementia, even though the provision of outdoor areas is required [Part IV, 23(2)(o)]; access is however specified in the standards (19.3) where it is easier to show compliance, even if the areas are not in fact used.
- 2) The needs of people with dementia are not considered any differently from non-demented residents (the EMI corridor any different from non-EMI corridor) and so to say the ‘physical design and layout... meet the needs of the service users’ Part IV, 23(2)(a) is inadequate to ensure the needs of people with dementia in terms of the built physical environment are addressed.
- 3) There are no specifications for what people with dementia need or require. Determining the needs of people with dementia is the responsibility of the proprietor, since the standards specify that ‘the onus’ is on them ‘to make sure the physical environment matches their requirements’ (Topic 5) Environment (Standards 19-26). Also, the layout of the premises must ‘meet service users’ individual and collective needs...designed with reference to relevant guidance’ which addresses connection to nature but not in ways specific or substantive. Need for nature, because it cannot be specified in square feet as floor space can, goes unspecified and consequently unmet.

- 4) Risk avoidance is the benchmark of the regulations and since providing a connection to nature is more risk-prone than for instance providing a connection to the internet, it is easier not to make the effort. This is reinforced by an inspection process that rewards evidence of risk-aversion while not rewarding evidence of innovation to service or environment that might entail risk.
- 5) Registration process, by specifying 'care' home, casts residents in the powerless role of recipient of care rather than co-creator in their own well-being. The assumption is that care needs are met by the care staff. If something is beneficial or necessary, then staff will supply it. What they cannot or do not supply is seen as 'extra', and understandably there is never enough time for it.
- 6) Risks to health and safety limit connection to nature, both in going outdoors and in using natural elements such as plants, soil and water, inside and out. An unfounded fear of *legionella* bacteria impacts provision of outdoor water features. Kitchens are doubly off limits, because health and safety requirements prohibit not only eating of home-grown food but preparing it, as contact with kitchen equipment and implements may cause harm.
- 7) Building regulations for fire safety, if not applied creatively through design, impact the flow of fresh air and daylight within homes by requiring structural modifications such as compartmentation to facilitate progressive horizontal evacuation. Such physical requirements can also facilitate locked EMI corridors which further restrict a person's connection to nature by preventing independent access to outdoors.
- 8) Restricting people with dementia from 'wandering' outside the home is regulated by the registration process under which security measures are specified. 'Wandering' inside the home is often discouraged for safety considerations. Movement inside and outside the home affords the person sensory stimulation, exercise, physiological orientation and emotional and psychological well-being, and may be a human rights issue as well.

In light of these conclusions from the literature review of the regulatory framework, the chapter now addresses the built environments of dementia care. First, the various types of residential dementia care environments will be presented as well as currently recommended design guidance. Study Two will then be presented which compared dementia care buildings for their potential for providing a connection to nature for the residents with dementia.

2.5 TYPES OF DEMENTIA CARE ENVIRONMENTS

There are temporal differences in dementia care provision ranging from an overnight stay through to a home for the rest of one's life. The built environments in which this care is provided are remarkably diverse architecturally but less so in care practice. As the results from Study Two will show, out of fourteen care environments there were eleven different types where people with dementia were living, including different size, age and style of building, different registration types and size of the group. This list shows the numerous types of residential places.

- Bungalow in residential neighbourhood; group living for 8 persons
- Purpose built care home with two residential floors; group living for 12 people
- Dementia resource centres with residential beds for less than 20 persons
- Residential care homes with no EMI unit (but people with dementia live there)
- Residential care homes with an EMI unit for 10 persons
- Nursing home with a dedicated residential EMI unit separate from nursing
- Ground floor EMI extension added to a listed building in 1950-60s
- Purpose built dual registered with 10 EMI beds integrated on ground floor
- Two story EMI for 24 persons added in 1950-60s to a listed building
- Top floor EMI unit for 24 persons in a new 69 bedded residential care home
- 2nd story of a new nursing home converted to an EMI unit for 26 persons

Dementia care is provided in residential care environments in both a formal and informal manner. Formally, a care home would be registered as caring for Elderly Mentally Ill (EMI) persons. The EMI unit will be a designated portion of the home with specified features in which specialist services are provided by trained staff. Most of the residents on an EMI unit will be experiencing some symptoms of dementia and will have had a diagnosis by their GP. A study of prevalence, mortality and cost of care reported the prevalence of cognitive impairment in residential care homes to be 38% of residents in local authority, 31% in voluntary and 34% in private care (Netten et al., 2001). Furthermore, from 44 – 50% of severely impaired older people are cared for in local authority or residential care homes (depending on funding type and according to 1995-1996 data, *ibid.* p. 17). (The term EMI unit is used interchangeably in the text with DCU (dementia care unit) or special care unit (SCU). All terms are found in the

literature, EMI tending to be in the British journals and DCU or SCU in the American journals.)

But also, people with dementia are quite commonly cared for in non-EMI residential care homes. A person may have developed dementia during their residency or they have moved into the home experiencing mild symptoms. Care staff routinely provide good care in meeting the needs of such residents. As long as both staff and resident are managing comfortably there is no reason to place the person into an EMI unit (openings are hard to find, it is more expensive and there is generally a waiting list). Only if their needs cannot be accommodated in residential care might a person be assessed for needing dementia care services and then be placed into a more specialised care environment such as an EMI unit. Specific issues that would prompt an assessment and placement include behaviours that jeopardise the person's welfare like aggression or leaving the building and forgetting the way back. It is worth noting that care staff increasingly provide what is considered specialised dementia care on non-EMI corridors of residential care homes, at times without the specialist training and staffing levels afforded on the EMI unit.

2.6 DESIGN GUIDANCE FOR DEMENTIA CARE ENVIRONMENTS

The environment is an important determinant of psychological and health outcomes for older persons with dementia (Sloane et al., 2002). 'The increased sensitivity to environmental conditions occurs because the illness reduces the individual's ability to understand the implications of sensory experiences. As a result, agitated behaviours, increased confusion, delusions, and other psychiatric disturbances are readily triggered by environmental stimuli' (Lawton & Nahemow, 1973; Sloane et al., 1998) in (Sloane et al., 2002). Efforts should be made to ensure awareness and orientation, as new residents may be easily overwhelmed by a complex and unfamiliar environment (Peppard, 1986). Published design guidance promotes a positive role for the physical environment in the care of people with dementia (Brawley, 1997, 2005; Calkins, 1988; Cohen & Day, 1993; Cohen & Wiseman, 1991; Judd et al., 1998; Marshall, 1992; Pickles, 1999; Schwarz & Brent, 1999).

Consensus goals for dementia care environments include:

- retain links to the healthy and familiar
- encourage increased social contact

- support homelike activities
- provide safety
- support the highest level of functional ability through meaningful activity
- maximise opportunities for autonomy
- control and regulate stimulation and challenge

Design criteria to achieve this within a positive physical environment include:

- small scale, familiar, domestic and negotiable physical environments
- providing sensory stimulation without stress
- a non-institutional image
- appropriate furnishing and finishes
- individual rooms
- avoid sharp contrast in flooring
- clusters of small activity spaces
- a positive microclimate
- flexible seating, access to positive outdoor spaces for recreation
- quality of detailing, materials appropriate to function and location
- meaningful landmarks, places for visiting
- sensory cueing, signs
- a gradation of spaces from public to private realm
- a variation in spaces to delight the senses
- a variation of spaces to stimulate the brain and assist with orientation
- an emphasis on proportion and scale
- a harnessing of views, aspect, orientation and land formation
- maximising use of natural daylight

Culture is said to be underused as a therapeutic resource in environments. To accommodate cultural heritage would involve sensitive spatial organization and appointment of the physical environment to support culturally based activities and rituals (Day & Cohen, 2000).

2.7 STUDY TWO – COMPARING DEMENTIA CARE BUILDINGS

The aim of Study Two was to develop a tool to assess the potential of residential care environments to provide such a ‘connection to nature. It builds upon Study One which confirmed that having a connection to nature was important to people with dementia and went on to identify activities and sensory stimulation through which they achieved such a connection. Study One also identified a set of enabling and challenging factors determining the potential for a connection to nature for the residents by studying two similar residential dementia care settings. The terms ‘nature’ and ‘connection to nature’

were also defined from participant data and observation. Existing environmental measurement scales will first be examined.

2.7.1 EXISTING RATING SCALES

This section will briefly review the existing scales used within residential and dementia care environments. There are a limited number of tools for measuring the physical environment or architectural features of the places where people with dementia live. None of these were used in Study Two as they did not possess the abilities to investigate the specific environmental characteristics that the research questions demanded. Assessment tools considered for the study included:

Therapeutic Environment Screening Scale [TESS, TESS-NH (includes the SCUEQS), and TESS 2+] (Sloane et al., 2002)
Sheffield Care Environment Assessment Matrix [SCEAM] (Parker, et al., 2004)
Professional Environmental Assessment Protocol [PEAP] (Weisman et al., 1994)
Environment Behavior Model (Zeisel et al., 1994)

Neither the TESS nor the PEAP assesses the physical environment precisely (Cutler et al., 2006). But even a very recently devised tool for assessing the physical living environment which contained 356 questions in 20 indices had only 10 relating to nature, and those examined the presence of outdoors amenities (ibid.). These studies did provide a starting point for shaping the domains eventually selected, in particular SCEAM which was devised specifically for residential care homes.

2.7.2 DEVELOPING THE MEASUREMENT TOOL

Study Two involved the development of an assessment tool derived mostly from the findings of interviews, focus groups and observations from Study One, as well as the literature described above. The tool checks for the potential for connection to nature similarly to the way a building audit tool checks for the potential to save energy through energy efficient measures or use of green building materials. A set of domains and sub-domains was developed covering many aspects of the site, as well as specifications found in the literature for positive care environments for people with dementia. The

development of SLANT was an iterative process refined through the course of the research taking these starting points:

- findings from interviews, focus groups and observations of Study One
- a limited number of questions concerning views to nature that existed in place-based perception studies in environmental psychology,
- the basic formats of a building survey and a landscape analysis,
- pre-existing measures as explained above,
- objective evaluation criteria from regulatory standards and inspection sheets,

From these sources, consensus goals of the physical environment that were to be evaluated by the instrument were derived, including control, autonomy, stimulation, familiarity, personalisation and support for physical and cognitive impairment.

SLANT is not a needs assessment which would give a measure of a person's experience, for example a profile measure to indicate outcome or an index measure to reflect levels of wellbeing (Netten, et al., 2002). The task was not to create an outcome measure to determine if the residents maintain a connection to nature, nor the degree to which they are able to do that. Similar to the framework of an investigative POE, a long term use for SLANT is as an improved measurement of building performance through quantification (Preiser, 1994). In devising any new rating scale there are the issues of validity and reliability.

‘Validity addresses the critical relationship between a concept and how it is measured. It asks whether what is being measured is a reflection of the underlying concept or construct. The closer the instrument comes to representing the true definition of the concept, the more valid the instrument.’
(Uys, 2002, p. 58)

Although the tool is not yet valid, the following actions were taken in this regard:

1) Specification of the full domains was devised based on a thorough review of the interdisciplinary literature, as well as specialist knowledge in landscape architecture, horticulture, architecture, assistive technology and dementia care.

- 2) An earlier tool was developed in the research which considered the physical and social factors of the care environment in terms of facilitating a connection to nature. This early tool, called PLANET, evolved from four hours of observations per month over a one year period in each of two homes, with a total of 20 residents with moderate to severe dementia. It was then piloted, results were disseminated (Chalfont, 2004a, 2004b) and the feedback contributed to the refinement of the domains and items which developed into SLANT.
- 3) The domains were adequately represented through the construction of specific items.
- 4) To ensure the accuracy with which SLANT measured the factors or content being studied, the items were based on the findings from Study One. For instance, connection to nature was found to mean nature-related activities and sensation from natural stimuli. The items therefore assess the home environment specifically for these affordances.
- 5) The instrument was evaluated for readability and clarity of content to ensure that the instrument measured what it was supposed to measure (Brink, 1998). This was carried out by experts in the fields of dementia care, nursing, landscape architecture, care home management and psychotherapy with regards to the degree to which potential for connection to nature was represented.
- 6) Face validity was attempted by writing the domains specifically for the types of spaces the residents actually used during the course of the day.

Since there existed no criterion measure with which to compare data, convergent validity was not ascertained. The tool does appear to have strong social validity as it generates worthwhile goals through methods considered acceptable, and has produced findings that recognise the importance of connection to nature for people with dementia.

SLANT has not been shown to be reliable. Reliability testing is necessary to determine the degree of consistency with which an instrument measures a variable or the ability of an instrument to produce similar scores on repeated testing occasions that occur under similar conditions (DePay & Gitlin, 1994; Uys, 2002). A reliable assessment tool is needed for an accurate and consistent measurement of potential for connection to nature

and the ability of the environment to provide it for the person with dementia (Uys, 2002). SLANT is a first step towards this. It is a way to systematically rate the ability of the environment to provide attributes identified in the research so far – essentially a building and landscape inventory enhanced with design guidance for dementia care environments. Further revision to the phrasing of questions would be necessary to tailor it for use within various disciplines. Also, reliability checking among design professionals would be required before the tool could be used as a checklist of design criteria. Nevertheless, it attempts to measure a previously unmeasured concept.

The domains of SLANT derived from earlier development of the tool PLANET as stated above. The ‘LANT’ domains for both tools came from the observational data from Study One and design guidance. The first domain is called Specifics (S) and draws upon existing literature of design guidance for buildings and rooms appropriate for residential dementia care settings (Benson, 2001; Brawley, 1997, 2005; Cohen & Day, 1993; Judd et al., 1998; Moos, 1980; Page & Stewart, 2001; Teresi et al., 2000). The next four domains are Landscape, Architecture, Nature and Technology. The five domains and 49 sub-domains of SLANT contain a total of 366 questions to which there is a yes (1) or no (0) answer. The domains and subdomains are listed here.

Domains and Sub-domains of SLANT

SPECIFICS - Design Guidance for Dementia Care Environments

1. Building site & neighbourhood
2. Spatial characteristics of the DCU or the place where the PwD lives (PwPwDL)
3. Small areas
4. Special rooms
5. Common areas
6. Entrance to DCU (or PwPwDL)
7. Bedrooms
8. Kitchen and Dining areas
9. Laundry
10. Bathrooms and toilets
11. Staff areas
12. Furniture and Fittings
13. Lighting (artificial)
14. Daylighting
15. Acoustics
16. Wayfinding

LANDSCAPE ARCHITECTURE

External 'Edge Space' of the Dementia Care Unit (DCU)

17. Circulation (doorways, access, surfaces, thresholds, handrails, paths & stimuli)

- 18. Seating and tables
 - 19. Proximity and orientation
 - 20. Structures and Amenities
 - 21. Locale
- Outdoor Area of the Care Home
- 22. Circulation
 - 23. Seating and Tables
 - 24. Proximity and Orientation
 - 25. Structures and Amenities
 - 26. Locale

ARCHITECTURE

Lounge or dayroom

- 27. Proximity to sensory stimulation (daylight, sunshine & fresh air)
- 28. Frequency of door and window use
- 29. Architectural features
 - Doors (location, quantity, control & permeability)
 - Windows (quantity, juxtaposition, aspect, complexity & panes)
- 30. View (extent and content)

Dining room

- 31. Proximity to sensory stimulation (daylight, sunshine & fresh air)
- 32. Frequency of door and window use
- 33. Architectural features
 - Doors (location, quantity, control & permeability)
 - Windows (quantity, juxtaposition, aspect, complexity & panes)
- 34. View (extent and content)

Dementia Care Unit (DCU)

- 35. Structural elements joining indoors and outdoors (porch, mudroom, entrance porch, balcony, roof garden, covered walkway)
- 36. Architectural features
 - Window sills (width, sun, use & personalisation)
 - Windows (control over, frequency of opening)
 - Glazing (glass enclosed room, conservatory & skylights)
 - Window (allowable opening, ease of hardware use, net curtains)

NATURE (plant and non-plant materials and elemental forces)

- 37. Plant materials
 - Diversity
 - Habitat
 - Sensory stimulation
- 38. Plants and plant uses indoors - cut, live, artificial & uses
- 39. Structure and Provision with plant and non-plant materials
 - (wall, fence, water feature, hanging baskets, window boxes, pots, vertical structure for shelter, garden materials & tools)
- 40. The Elements – weather is visible on the ground
- 41. Domestic animals - cats, birds & dogs, living or visiting
- 42. Local Nature – Proximity to wilderness or farm ecosystems

TECHNOLOGY

- 43. Freedom of movement between indoors and out
- 44. Going off site

45. Fresh air access
46. Safety & security of outdoor areas
47. Enticement
48. Use of assistive devices for gardening and access to garden areas
49. Communication & Entertainment

With this new tool, Study Two was now able to address the research question: *Do residential care buildings enable connection to nature? (How or how not?)*.

2.7.3 STUDY SITES

The purposive sample was comprised of 14 homes chosen to include a broad range of types of residential environments currently caring for people with dementia. The homes ranged from an 8-bedded domestic neighbourhood setting in Scandinavia to a 69-bedded purpose-built home in England. There was a mix of registrations among the sample, meaning that some homes have corridors which are registered for elderly mentally infirm (EMI) while other homes were not registered specifically but did have people with dementia living there. This enabled a comparison between buildings specifically designed for people with dementia and those that were not.

The sample includes two non-UK exemplars of good practice, plus a mix of ages, styles and configuration of buildings, ranging from a bungalow to a two story home, 1960's local authority architecture to 1990's privately owned care homes. Because a mixture of registration types was included in the sample, it captured different types of residential care housing that a person with dementia may find themselves living in, depending on the severity of symptoms and their funding resources.

For instance, once a person with dementia is required to live in a care setting rather than their own home, their care pathway may lead them temporarily into respite until an assessment can be carried out and a permanent placement is found. Two dementia resource centres offering this service are included in the sample. Resource centres provide family support and day services but in some cases therapy, domiciliary support and residential care. The first centre for older people was established at Ecclesfield, near Sheffield, in the early 1980s. A move is underway to revive their role in dementia care. Likewise, depending on their medical health, frailty, level of physical disability as well

as cognitive impairment from their dementia, they may require nursing EMI rather than residential EMI.

For these possibilities, the sample includes one integrated EMI unit with both nursing and residential EMI beds. Also, two historic listed buildings are included with EMI extensions added on by the local authority in the 1960's.

Site	Location	# in home / # with dementia	year built & year registered	Unit level of registration	Location in bldg	Building type & style	LA P or V *
T	Scandinavia	8 / 8	? ?	home	gr fl	single family in the community	LA
D	Scandinavia	?/?	? ?	Building	1 st & 2 nd	newly purpose-built	LA
S	UK	40 / 10	? 1994	corridor	gr fl	X-part 3 former sheltered acc.	V
P	UK	40 / 10	? 1994	floor	1st fl	X-part 3 former sheltered acc	V
AG	UK	31 / 26	? 1988	corridor	1 st fl	new build adjacent listed bldg	P
G	UK	60 / 24	? 1999	floor	2nd	New build, purpose-built	P
SC	UK	31 / 31	? ?	Building	lg, gr	converted, adapted convent	P
TC	UK	69 / 10	1994? 1996	Integrated EMI	gr	New build, purpose-built	P
BT	UK	35 / 24	1959	wing	gr, 1st	Listed bldg with EMI extension	P
AH	UK	38 / 15	? 2004	wing	gr	Listed bldg with EMI extension	P
R	UK	40 / ?	? 1994	integrated	gr, 1-3	X-part 3 former sheltered acc	V
C	UK	40 / ?	1963 1994	integrated	gr, 1st	X-part 3 former sheltered acc	V
N	UK	12 / 12	? 2003	Corridor	gr/1st	X-part 3 former sheltered acc	LA
F	UK	19 / 19	? 2003	Building	gr	X-part 3 former sheltered acc	LA

* Local authority (LA), Private (P) or Voluntary (V)

** Scandinavia (NK)

The fourteen study sites are identified according to location, number of people in the home, number of people with dementia, year built, year registered, unit level of registration, location of the unit in the building, building type and style, and whether the home was local authority, private or run by a voluntary organisation. The results of the comparison of the sites overall are then reported and findings given. (Pictures of the facilities and individual SLANT results for each study site appear in Appendix A.)

2.7.4 RESULTS

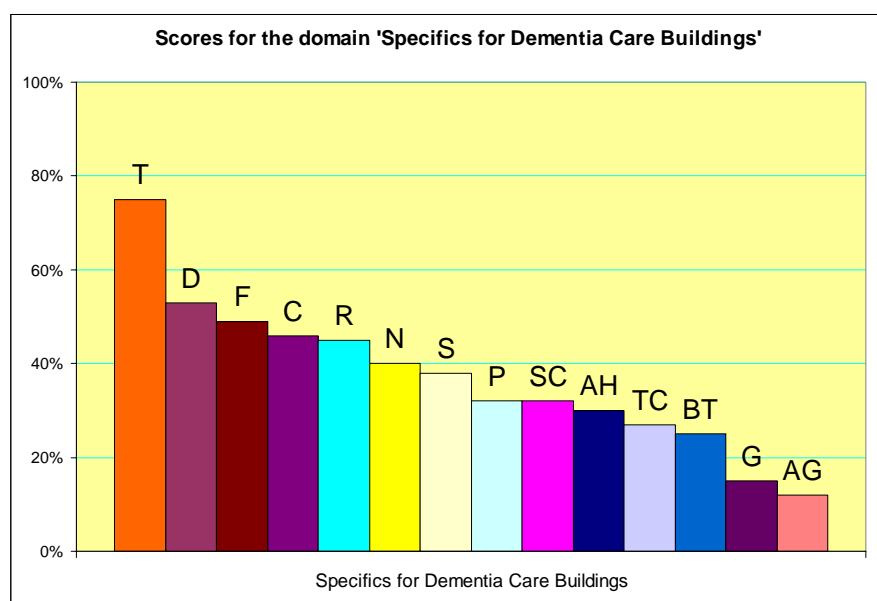
The 14 study sites were analysed with SLANT and results from the first domain ‘Specifics for dementia care buildings’ are given in Figure 2.3. Then the next four domains of Landscape, Architecture, Nature and Technology are presented. Next, these last four domains are averaged together to come up with the score for ‘Potential for Connection to Nature’ for each of the 14 sites. An analysis is made as to why settings scored high or low. And finally, a comparison is then made between ‘Specifics’ and ‘Potential for Connection to Nature’ which shows an association between these two domains for the sites overall.

2.7.4.1 ‘SPECIFICS’ DOMAIN

‘Specifics’ is the first domain in SLANT and contains 16 sub-domains. Questions are compiled from published literature of design guidance and recommendations for dementia care environments. The scores for all 14 study sites appear below. Results showed a pattern in terms of performance of the various environments. The two Scandinavian homes (T & D) which were purpose built by the local authority were the two top-ranked sites. All other buildings are located within the northern UK. The dementia resource centres (F & N) and the two residential care homes with no designated EMI wing (C & R) were the highest ranked of the UK buildings. The two residential care homes with designated EMI wings (S & P) ranked next.

The six homes scoring the lowest were of three different types – large purpose built care homes, those with EMI extensions built on in the 1950-60’s and dual-registered homes (registered for both residential and nursing care beds). Dual-registered homes either had integrated residential EMI beds with nursing beds on the same corridor or they had a separate residential EMI unit on a corridor of its own. Of the twelve UK homes, the larger, newer, purpose-built care homes with the provision of an EMI unit specifically designed for people with dementia, scored lowest on features known to contribute to good dementia care environments. The smaller, older buildings which were renovated from former local authority sheltered housing were found to have more of the positive environmental aspects associated with good dementia care environments.

Figure 2.3 Scores for the domain 'Specifics for Dementia Care Buildings'



The top-ranked site (T) is a pioneering exemplar of good dementia design. As such, some of the sub-domain questions are based on characteristics of this type and configuration of building. So it is not surprising to see it perform well in this analysis. The sub-domains examine 16 aspects of the physical environment. Figure 2.4 is ordered left to right from highest to lowest ranking site.

The following summarises the different settings ranked from highest to lowest score:

- Bungalow in residential neighbourhood; group living for 8 persons (Scandinavian)
- Purpose built care home with two residential floors; group living for 12 people (Scandinavian)
- (2) Dementia resource centres with residential beds for less than 20 persons
- (2) Residential care homes with no EMI unit (but pwd live there)
- (2) Residential care homes with an EMI unit for 10 persons
- Nursing home with a dedicated EMI unit separate from nursing
- Ground floor EMI extension added to a listed building in 1950-60s
- Purpose built dual registered with 10 EMI beds integrated on ground floor
- Two story EMI for 24 persons added in 1950-60s to a listed building
- Top floor EMI unit for 24 persons in a new build 69 bedded residential care home
- 2nd story of a new build nursing home converted to an EMI unit for 26 persons

Figure 2.4 Distribution of scoring for sub-domains of 'Specifics for Dementia Care Buildings'														
Sites are ranked highest to lowest from left to right														
STUDY SITES (# of questions)	T	D	F	C	R	N	S	PG	SC	AH	TC	BT	G	AG
Building site & neighbourhood (9)	8	5	5	4	4	4	4	4	3	1	2	2	2	2
Spatial characteristics (17)	12	7	7	4	2	4	2	1	4	4	4	3	0	0
Small areas (6)	5	3	6	6	6	6	4	2	3	0	5	1	0	0
Special rooms (5)	3	3	4	3	3	4	3	2	0	1	1	1	2	1
Common areas (3)	3	2	3	2	2	2	2	2	1	2	1	0	0	0
Entrance (6)	6	2	3	4	4	2	1	0	1	1	0	0	0	0
Bedrooms (5)	2	1	1	4	2	2	2	3	4	2	1	3	2	1
Kitchen and Dining areas (8)	8	6	1	2	1	2	3	4	1	2	2	1	0	1
Laundry (2)	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Bathrooms and toilets (9)	5	5	3	3	4	2	2	2	5	5	3	2	5	3
Staff areas (7)	5	7	5	5	6	5	6	5	5	4	2	2	2	2
Furniture and Fittings (5)	5	3	1	3	4	3	3	3	3	3	2	3	2	2
Lighting (artificial) (7)	6	2	2	2	2	1	4	2	1	2	1	1	0	0
Daylighting (7)	1	3	4	1	2	0	0	0	1	1	2	4	0	0
Acoustics (3)	3	3	3	3	3	2	2	2	0	2	0	2	0	0
Wayfinding (1)	1	1	0	0	0	1	0	0	0	0	0	0	0	0
TOTALS	75	53	48	46	45	40	38	32	32	30	26	25	15	12

There was an even spread of variability across regulated & inspected domains such as bedrooms, bathrooms & toilets, staff areas and furniture & fittings. The most variability between settings was in unregulated areas such as:

- Building site and neighbourhood
- Spatial characteristics
- Small areas and special rooms
- Common areas
- Entrance
- Kitchen and dining areas
- Lighting (artificial and daylight)

2.7.4.2 LANDSCAPE

This domain was scored by dividing the on-site landscape into two parts – adjacent or not adjacent to where people with dementia were living. The reason for scoring adjacent and non-adjacent landscape separately is to reflect the knowledge accumulated in Study One as well as observations in the homes. It was found that outdoor areas of care settings that are non-adjacent to where people with dementia spend their day (lounges and dining rooms generally) are rarely visited by people with dementia for many reasons. For instance, a person with dementia:

- may not know the area exists if they cannot see it,
- may need (or feel they need) carers to take them outside,
- may be unable (or feel unable) to leave the unit unescorted, and
- may not have outdoor time scheduled into their daily routine.

Therefore, to gain a true score of the potential for connection to nature, this method of scoring landscape reflects the reality that non-adjacent is practically non-accessible – unless through the incentive of carers the person is taken outside. In most facilities there was a designated EMI unit, or EMI beds were registered as being in a certain corridor of the home. All facilities were initially examined for an area adjacent to the EMI unit. Such a space was termed an External Edge Space and defined as ‘an outdoor area adjacent to the exterior wall within close visual proximity to a common area used by residents of the home.’ Examples could be a courtyard, patio, or seating area. These areas could be in the form of a balcony if the unit was not on the ground floor. If there was a dedicated EMI unit, but no adjacent outdoor area or balcony existed for it, then the facility scored zero. In this case the landscape not adjacent to the building was considered. Scoring of non-adjacent landscape appears in a different place on the chart. Only two facilities (AG & G) had no external edge space.

Sub-domains of Landscape Architecture

External Edge Space of the DCU (like a courtyard, patio, balcony or seating area that is adjacent to the exterior wall within close visual proximity to a common area used by people with dementia in the home) or alternately score an **Outdoor Area of the Care Home** with the following criteria:

Circulation (doorway existence & openness; access, surfaces, thresholds, handrails, paths & stimuli)

Seating (choice, location, sun/shade, adjacency, visibility, materiality, proximity to door, portability, sturdiness, position, sheltering, configuration, grouping, cleanliness and repair)

Tables (provision, cleanliness and repair) awnings & umbrellas

Proximity and orientation (microclimate, nearness of assistance, enclosure, security, overlooked, view out)

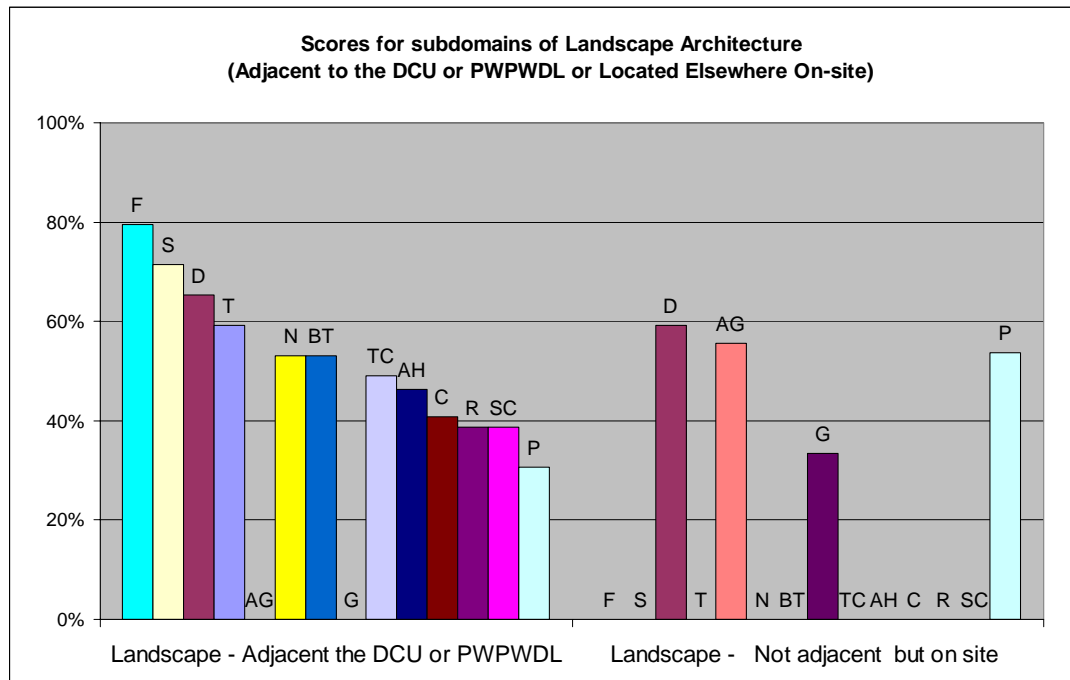
Structures and amenities (foliage covered perimeter, gazebo, greenhouse, shed, summerhouse, clothes line, food area, sporting area)

Locale (views to landmarks, park, field, water body; sound & motion of passing train, tram or boat; sporting or recreational area and farm or field with livestock)

For other facilities such as residential homes without an EMI registration, it was evident (and confirmed by the managers) that the building was a ‘place where people with dementia lived’ (PwPwDL) simply because a percentage of people in residential care have dementia. They stay as long as their needs are being met within the residential staffing levels, which are lower than EMI levels. Essentially, as long as the resident and the care staff can ‘manage’ then they continue to live in a residential rather than in an EMI setting. For these buildings (sites C and R), the accessible outside areas adjacent the home (rather than adjacent an EMI unit) are then considered in the scoring. In this case a lounge on a floor on which a person with dementia is likely or known to live, is chosen and its adjacent outdoor area is scored.

Several sites had both adjacent and non-adjacent landscape areas. Site D for instance scored high on both areas. Such facilities offer a greater choice to the residents and the staff and family carers. Site D regularly holds outdoor events in the landscape that is designed to facilitate many cultural as well as horticultural activities. Site P also has adjacent and non-adjacent landscape areas. Both of them are scored to point out that the non-adjacent area is considerably more robust than the first floor balcony area adjacent to the EMI unit. Still, it is the adjacent score, the external edge space, (rather than the non-adjacent) which is counted towards the score for the domain of Landscape, and hence the overall ‘potential for connection to nature’ score.

Figure 2.5 Scores for the Landscape Architecture sub-domains



Results showed that not all facilities registered to care for people with dementia have an outdoor edge space, although the ones surveyed for this study that didn't have one, had a non-adjacent area instead. The two highest ranked buildings were alike in that they both had an immediately adjacent, secure, enclosed outdoor space benefiting from intense staff and volunteer involvement. They were also of the same vintage and building style being former local authority sheltered housing. The highest ranked building had a central courtyard or 'quad' that facilitated the staff-led development of an extensive garden area. The courtyard was highly visible from the internal corridor which encircled it and from which direct access was possible. The second highest ranked building had a secure, enclosed area cited advantageously for visual connections and proximity to indoors. The third highest score was for a balcony space that seamlessly connected to the interior common areas, in essence behaving as an extension of the living room. The fourth highest score was a bungalow with a normal domestic outdoor environment. It was the only site that scored something in all 5 sub-domains of Landscape. The two buildings ranking 3rd and 4th were the two Scandinavian sites and both were purpose built in the last decade for people with dementia. In 5th place were the dementia services centres and a 1950s EMI extension on a listed building. AG and G scored negatively because of no landscape adjacent the EMI unit.

STUDY SITES	F	S	D	T	N	BT	TC	AH	C	R	SC	PG		AG	G
Circulation (12 questions)	10	8	8	10	6	7	7	8	6	7	6	5		11	7
Seating and Tables (23)	22	18	19	17	17	14	15	15	9	9	11	7		15	9
Proximity & Orientation (5)	4	5	3	2	3	4	2	1	3	3	2	2		4	2
Structures & Amenities (9)	3	4	0	1	0	0	0	0	2	0	0	0		0	0
Locale (5)	0	0	2	2	0	1	1	0	0	0	0	1		0	0
	39	35	32	32	26	26	25	24	20	19	19	15		30	18

Ranking by type of care setting from highest score to lowest on Landscape Architecture:

- Dementia resource centre with residential beds for less than 20 persons (quad)
- Residential care home with an EMI unit for 10 persons (patio)
- Purpose built care home with two residential floors; group living for 12 people (Scandinavian)
- Bungalow in residential neighbourhood; group living for 8 persons (Scandinavian)
- Dementia resource centre with residential beds for less than 20 persons
- Two story EMI for 24 persons added in 1950-60s to a listed building
- Purpose built dual registered with 10 EMI beds integrated on the ground floor
- Ground floor EMI extension added to a listed building in 1950-60s
- (2) Residential care homes with no EMI unit (but pwd live there)
- Nursing home with a dedicated EMI unit separate from nursing (on LG floor)
- Residential care home with an EMI unit for 10 persons (upper floor w/balcony)

2.7.4.3 ARCHITECTURE

This domain was scored in terms of three different spaces: the lounge or dayroom, the dining room and the EMI unit in general. In cases where there was more than one lounge, the one most used by residents was scored. Bedrooms were not included in SLANT as it was evident on these two units that most residents spent their waking day in the lounge and dining room. (Since the completion of the thesis research, researchers working in other homes have reported that a number of people do actually spend their days in their bedrooms. To incorporate this potentiality into future versions of the tool, further development of SLANT could extend to investigation of bedrooms.) The Architecture domain included 99 questions which considered the following subdomains:

Sub-domains of Architecture

Lounge

Proximity of a person within a room to sunshine, daylight and fresh air

Frequency of door and window use

Architectural Features - Doors and Windows (quantity, control, permeability, juxtaposition, aspect, panes and complexity)

View (content, liveliness, community, variability, features supporting viewing)

Dining room

(same as above)

EMI Unit in general

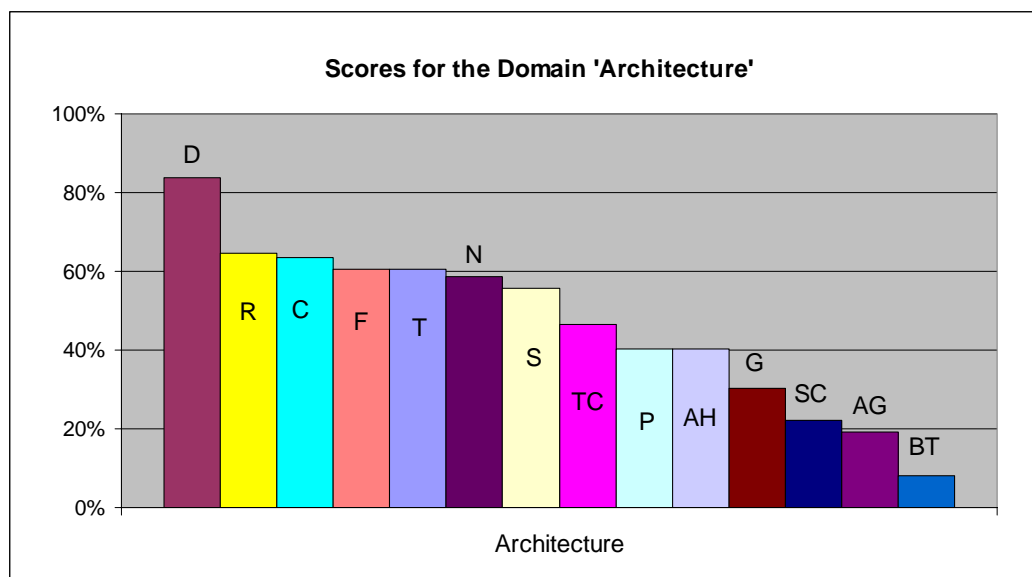
Availability of structural elements that join indoors with outdoors, affording sensory stimulation as well as protection

Architectural Features (affordance and evidence of windowsill usage; control and use of windows, existence of glazing for day-lighting; limitations on opening width; opener operation; curtain usage)

Results for Architecture showed the highest overall score for the two-story purpose built local authority dementia care facility in Scandinavian. Factors contributing to this high rating included:

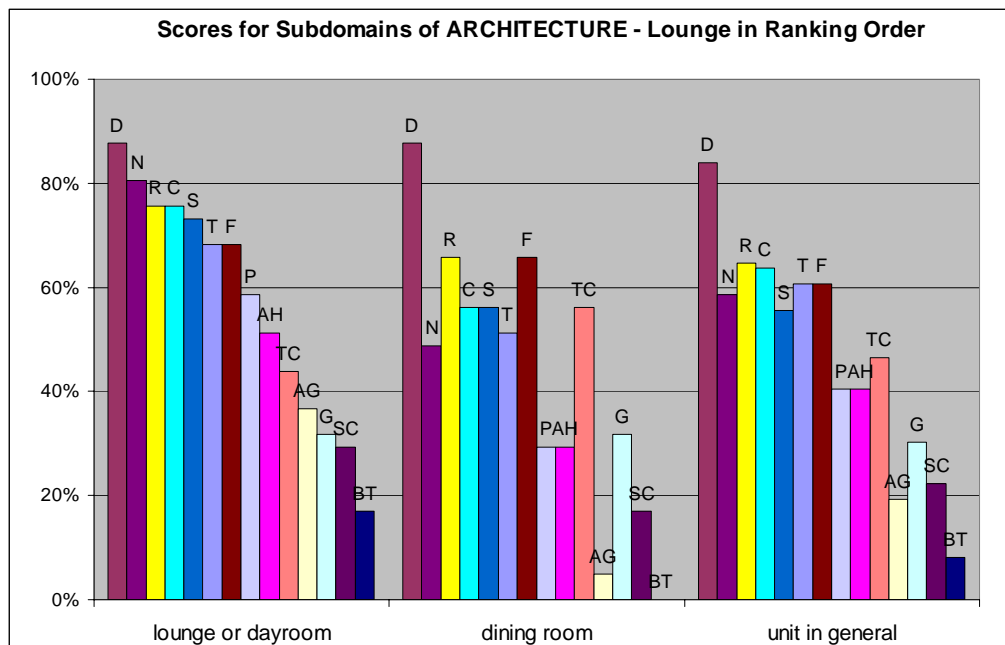
- Proximity of the people within a room to sunshine, daylight and fresh air
- Quantity, control, and permeability of doors
- Quantity, juxtaposition, aspect, panes and complexity of windows
- Frequency of door and window use
- Views (content and diversity, depth and breadth)
- Availability of structures that join indoors with outdoors (i.e. porch or entrance)

Figure 2.6 Scores for the domain of Architecture



Local authority buildings rated second highest including the resource centres and residential care homes. Purpose-built facilities for 60 or more people, private homes, combined nursing and residential care homes and historic homes with EMI units added by local authority all scored lower in terms of architecture of the places within the home where people with dementia lived. This last set of buildings seemed to have positive architectural features contributing overall to connection to nature, but scored low when only the EMI units were examined. The two historic homes in particular had large, sun-filled rooms as a result of the original siting of the building, ceiling heights and fenestration, including clerestory windows and views to picturesque surroundings. The EMI additions however were devoid of such attributes. Both additions did however benefit from having a section of corridor that was single-loaded and window-lit.

Figure 2.7 Scores for Architecture sub-domains



Attributes limiting connection to nature in these EMI additions included north-facing lounges, windows on only one wall, small windows, minimal complexity of window panes, no views, spatial aspects non-conductive to viewing (for instance no windowsills or standing spaces near windows) and poor provision for natural light or cross-ventilation. Looking at the sub-domains reveals a discrepancy that often existed between lounge and dining room, the latter scoring less in all but one location. One dining room had no windows except a single pane in an exit door to the fire escape. The unit in general was scored for structural elements that joined indoors with outdoors (affording sensory stimulation as well as protection) as well as qualities of the architectural features such as windows, windowsills and glazing.

2.7.4.4 NATURE

The domain of Nature considers plant and non-plant materials inside and outside the home. It also looks for evidence that the environment around the home provides habitat which attracts birds and wildlife, supports place-making by the residents and allows natural elements to be experienced. The domain of Nature included 41 questions in the following sub-domains:

Sub-domains of Nature

Plant materials within (or can be seen from within) the outdoor area accessible to residents:

Diversity

- Seasonal plants, annuals or vegetables
- Mature shade trees
- Mature flowering or evergreen shrubs
- Groundcover or vines
- Perennials

Sensory Stimulation - Tactile or fragrant plants

Habitat (available on-site or in the near vicinity)

- Wild, overgrown shrubs, brush piles & woodpiles
- Berries, soft fruits or nut bushes
- Nesting places for birds in trees or in ivy growing on trees or walls
- Inland body of water - lake or pond
- Coast, beach, marsh, bay or fjord
- River, stream or waterfall
- Nesting box, bird feeder or bat box

Plants and plant uses indoors (specific to the EMI unit):

- Cut flowers
- Live plants
- Evidence that indoor plants are being maintained
- Silk or artificial flowers or plants
- Plants grown on site and used for eating or cooking
- Plants on-site used for decorating, crafts or cut flowers

Structure & Provision with Plant and Non-Plant Materials

- A Wall or Fence is colonised with creepers or moss
- Wall or fence provides a protected and warm place to sit
- Water feature (built) pond, waterfall, fountain or birdbath
- Garden Sculpture, Artwork or Signage that residents helped create
- Hanging baskets and plants pots present and being used
- Window boxes present and being used
- Plants in pots or baskets are thriving and generally not neglected
- Vertical structure (trellis or screen) used to create a sheltered space and/or to grow plants

Garden materials (compost, soil, plants) and garden tools available to residents

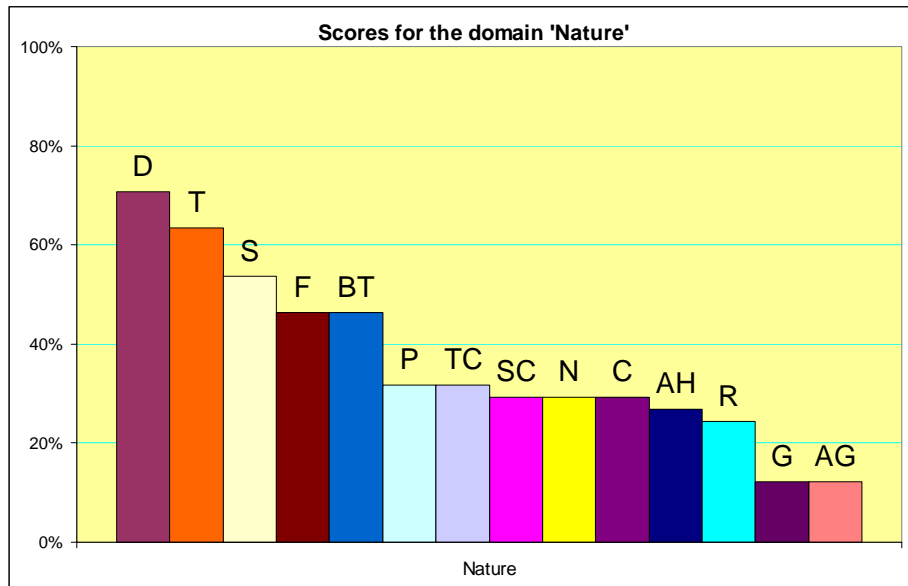
The Elements - rain can be seen on the ground outside the window of the EMI unit

Animals – Cats, birds & dogs live in or visit

Local nature – Ecosystems

- A natural environment (pond, field, river, woodlands, etc.) is visible
- A farm or natural area is near enough to visit on a day trip.

Figure 2.8 Scores for the Domain of 'Nature'



Results for Nature showed the highest scores again are captured by the two Scandinavian sites, both of which contain a diversity of natural habitat and cultivated garden areas, as well as being near fjords. Within the homes there were many well-tended live plants. Horticultural activities and crafts made use of plant materials grown or collected on-site or available locally. The garden areas were developed to be used by residents for tending and harvesting plants. Involvement by residents with local wildlife is evident in bird feeders and bird houses in proximity to windows. A planting bed for herbs had homemade signs labelling the plants which were evidently used in the kitchen of the home. Site S had an extensive adjacent patio area where horticultural activities facilitated with residents included potting, growing, watering and harvesting flowers and vegetables. Fresh flowers, live plants and silk flowers were abundant inside the home. Site F had an intensively developed garden area in the quad in the interior of the building layout. Site BT had a patio area accessed by two doors from a main corridor space adjacent the lounge. Raised beds on the patio, chairs, benches, herbs grown and used inside as well as the nearness of extensive parkland and woodland habitat gave the home a high ranking. The next 7 sites scored in the range of 24% to 31%. These homes may have had visual proximity to plants and habitat but no physical contact given the location of the DCU in relationship to the outdoor area. Or the accessible outdoor area was not developed to engage residents through sensory stimulation. Or the area was visually accessible but not used because it was only accessible by steps. The last two sites had upper floor DCUs with no outdoor area physically or visually accessible to the residents. Both had areas on site that could be visited under ideal circumstances.

2.7.4.5 TECHNOLOGY

This domain was scored in terms of the availability of assistive devices or systems that enable the residents' connection to the natural world. Domains were:

- Freedom of movement between indoors and out
- Going off site
- Fresh air access
- Safety and security of outdoor areas
- Enticement
- Use of assistive devices for gardening and access to garden areas
- Communication & Entertainment

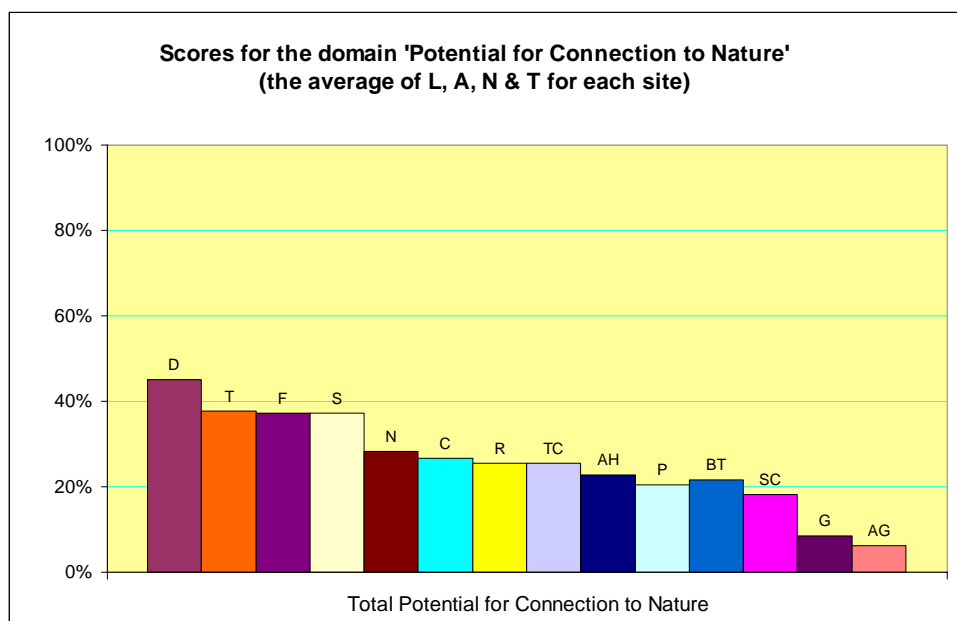
No figure is shown as only 3 sites had any technology. One Scandinavian site used sensors on exterior doors to alert care staff that a door is open, allowing resident safe and unrestricted outdoor access and freedom to come and go. Each resident flat had its own exterior door which was only locked at night. The other Scandinavian site had passive sensors on windows to alert carers through their computer monitor that a window is open, eliminating the need to restrict window openings. The third site with technology had a Snoezelen Room in which technology was used for sensory stimulation with a natural element (pump for circulating water in a water feature).

2.7.4.6 POTENTIAL FOR CONNECTION TO NATURE

The aim of Study Two was to determine potential for connection to nature afforded the residents with dementia in 14 different dementia care buildings. The highest scoring buildings in Figure 2.9 afford the highest *potential* for connection to nature for residents with dementia based on the average for the four domains of Landscape, Architecture, Nature and Technology. These results look similar to those from the individual domains reported earlier in the chapter, meaning that some sites scored consistently better than others in all aspects while others scored worse in all aspects. In other words, sites tended to be strong or weak *overall*, in all domains. And it also showed that certain *types* of settings ranked consistently stronger or weaker than other types of settings. So, there seemed to be a uniformity *within the setting itself* as having a strength or weakness in terms of potential for connection to nature. Possible causes for these strengths and

weaknesses will now be given. The factors and their impact will be listed with examples from the study sites given to illustrate.

Figure 2.9 Scores for the domain of Potential for Connection to Nature



Factor	Impact
Culture Includes: Daily life National economy Political will Social norms Stigma of 'demens' Intergenerationalism	(+) Will affect the amount of social and seasonal activities and practices, contact with (+) local people and locations, community functions, history and ritual: (+) Scandinavian life contains nature-related seasonal and festive activities (+) All homes are local authority, not private – expectation of good quality for everyone (+) Older people are valued - high standards are expected in accommodations (+) Maintaining contact with nature is considered good care, expected to continue in later life (like sewing, cooking and music), therapeutic for people with dementia (+) Government ethos for social services – funding priority, modernisation, forward thinking (+) Wealthy nation - High quality of life, expensive, high standards, well-funded (+) Agriculture and livestock are part of life – visiting a farm, dog sled ride in the winter (+) Growing and using produce from the garden is a normal part of life, not restricted
EMI concept	Will mean the EMI unit is locked and alarmed, controlling egress for resident
Special need; safety/security	(-) if this concern overrides other needs such as stimulation and contact with natural world
Budget	Local authority

	Private Voluntary organisation
Fear of litigation & climate of risk	Restricted window openings; height and size of windows Perception of safe versus dangerous – outdoor ground surfaces and provision or lack of enclosure
Conversion	Will use spaces formerly designed to be used perhaps differently for another set of users
Adaptive reuse, not purpose-built	(+) can be a benefit if former use was less restrictive, non-custodial (SC - former convent) (+) Room sizes and location within the building afford choices, whereas a purpose-built home would have uniformity of room size and placement within the building (SC)
Building materials	Thickness of walls and fenestration
Change in registration	Common rooms could change uses to accommodate addition of an EMI unit (W)
Adjacent eyesore	If eyesore exists, could have view permanently blocked to it, meaning no view is possible at all (BT)
Cladding	1960's exteriors had large amounts of glazing & use of glazing as cladding (N)
Circulation	Circular route affords movement, more opportunities to look out or go outside

Number of residents / beds	Will affect the overall building size & possibly its shape, layout & room distribution
Up to 20 residents	all rooms are probably EMI and could be on the ground floor - (+) possible access to outdoor area, connection to neighbourhood (S,T) (-) possibly no access or no outdoor area - small lot, no views or poor ones
Over 40 residents	Will probably have an EMI corridor, that may be on an upper floor - (-) no outdoor access (AG, G) except possibly a balcony (P) (+) treetop, penthouse views if mature trees are on site or if site is elevated (R) (+) possible close-up view of wildlife if tree canopies are growing near the windows (P) (+) possible view down onto inviting outdoor space (will perhaps encourage use of it, but at least raises awareness that it exists) (S) If linear form - (-) limits choice of aspect, view, daylight travelling through the home If radial form - (+) extending arms can take advantage of sun, wind, view or space (C)
Age of home (or addition)	Philosophy of dementia care, government funding priorities for social care provision, national economy and regulatory climate may determine size, design & layout of space
Older home, new-build or EMI addition	(+) if built during a time when these factors were stronger (-) if built during a time when these factors conflict
Locations of common rooms	Ends and corners of buildings Width of wing
Entrance	Proper entrances to EMI units afford sitting near them with some exposure to outdoors
Siting on the lot & in the local	Will determine the nearness of habitat & wildlife, availability of open space, views, contact with community and neighbours, character of the

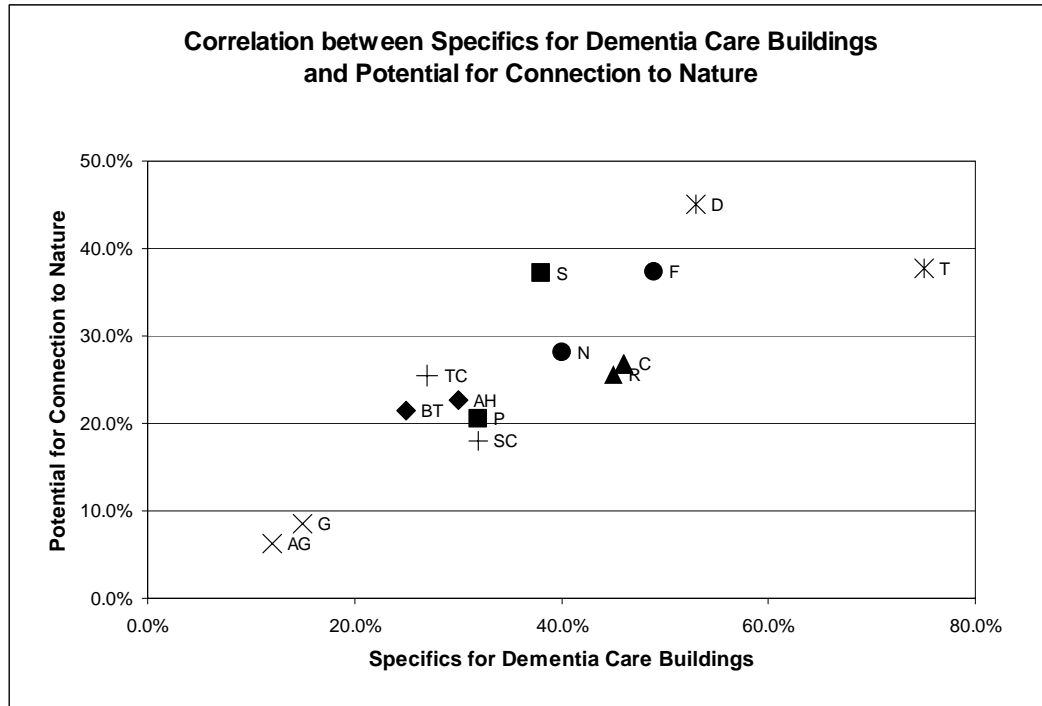
area	home (perception of the home by carers and local people as normal housing versus institution affects their use and involvement)
On-site: ratio of built to natural spaces	(+) if balanced between building and landscape there may be open space, greenery, garden, trees, etc. on site (P, C) (-) if site is building-heavy there may be little or no natural resources
On-off site: Location and position of home in local area	(+) for an urban or suburban location, if sited adjacent natural areas & community resources such as gardens, parks, allotments, sports grounds, rivers, etc. (BT) (-) if the building is out of scale for the neighbourhood (D) or the area lacks natural resources (+) if near to houses, roads, traffic, schools, and bus routes then window use is higher
Form & mass	Will affect the internal layout, configuration and complexity
Subtractive Cubic Additive Clustered Centralised Complex form	(+) 'on the interior all functional needs are satisfied (light penetration, continuity, circulation)' (Ching, 1996, p. 55) (F, N) (-) 'very difficult to satisfy the spirit' Corbusier in (Ching, 1996, p. 55) (+) different size floors & wings, top floor could be a lounge, windows all round (R) (+) function can be 'read', building is understandable in its layout and use (+) windmill or cross form may increase potential for views, daylight and ventilation (C) (+) can create and contain outdoor edge spaces; possible microclimatic spaces (TC)
Site topography	Possible rooms on lower ground floor giving only one aspect/windows (SC, R) Sloping sites – area can be cut out to create sheltered outdoor space (S)
Energy efficiency	
Day-lighting Solar gain Window size	(+) skylights (F) clerestory windows (BT) (+) if ground floor corridors are day lit (F) (-) if conservatory room or glass roof is not ventilated in summer or heated in winter (-) if emphasis is on heat retention & thermal gain

2.7.4.7 CORRELATIONS BETWEEN 'SPECIFICS' AND 'POTENTIAL FOR CONNECTION TO NATURE'

To see if there was a relationship between buildings with good Potential for Connection to Nature and with high Specifics for Dementia Care, the two were compared in Figure 2.10. There was a direct correlation, meaning that the two factors are associated.

Buildings with high levels of design features specifically good for dementia care also have features affording good potential for connection to nature. Therefore it is more than intuitive that providing for connection to nature is compatible with good dementia care design.

Figure 2.10 Correlation between Specifics and Potential for Connection to Nature



Furthermore, homes that scored low on potential for connection to nature had one or more of these characteristics:

- The EMI corridor was formerly a nursing wing
- The EMI corridor was in a newer, purpose built 60-bedded home
- The EMI unit was an extension built by local authority in the 1960's
- The EMI unit was an extension to an older listed building
- A newly registered EMI corridor was on an upper floor
- Well-developed, nice gardens on site, just not accessible from the EMI unit
- EMI and nursing residents were integrated on the same corridor

Homes that scored high on potential for connection to nature had one or more of these characteristics:

- Home was small scale and domestic style set in a residential neighbourhood
- Facility was not in the UK
- Home was not registered for EMI but had people with dementia living there
- EMI unit had an adjacent ground floor secure outdoor garden area
- Home organised around central courtyard with views inward and outward
- EMI unit for small group, approximately 10 people

2.7.4.8 **EMI VERSUS NON-EMI AND GROUP VERSUS COMMUNAL DESIGN OF HOMES**

There were two anticipated findings from Study Two which will be discussed now. First it was expected that group homes would have a higher potential for connection to nature than communal homes. This distinction is commonly found in the literature and is defined for the purposes of this study (from Netten, 1989) as follows:

Group homes - The building floor plan shows a dispersed design with two or four dining rooms and sitting rooms. The activities of daily living, eating, sleeping and socialising are confined to a definable area of the building for a particular subgroup of residents, often 10-12. Bedrooms would be in close proximity to these, with WCs and bathrooms nearby. Residents of this subgroup would rarely visit other areas of the home.

Communal homes – The building floor plan shows a centralised design with 20 or more bedrooms on one long corridor. Dining rooms and lounges are large enough for all residents on the floor or wing and are concentrated in one part of the home away from the bedrooms. There are often several sitting areas.

(based upon Netten, 1989, and others)

Importantly, it was found that the top five sites for potential for connection to nature were all group homes and the bottom four sites were all communal homes (Table 2.4).

Table 2.4 Relationship between type of home and potential for connection to nature

Home	D	T	F	S	N	C	R	TC	AH	P	BT	SC	G	AG
Group or Communal design	G	G	G	G	G	C	C	C	G	G	C	C	C	C
Ranking - potential for connection to nature	1	2	3	4	5	6	7	8	9	10	11	12	13	14

Secondly it was expected that homes or areas of homes that were classified as EMI would have a lower potential for connection to nature than homes in which people with dementia were living, but not on EMI units as such. Table 2.5 tested this.

Table 2.5 Relationship between level of dementia care and connection to nature

Home	D	T	F	S	N	C	R	TC	AH	P	BT	SC	G	AG
Residential, EMI, Integrated	E	E	E	E	E	R	R	I	E	E	E	E	E	E
Ranking - potential for connection to nature	1	2	3	4	5	6	7	8	9	10	11	12	13	14

The expectation was only partially upheld. Some EMI homes did score low on potential for connection to nature, but some also scored high. Corridors within homes that were residential or integrated ranked in the middle, neither high nor low. When these two questions were combined (Table 2.6), it was found that EMI group homes ranked highest and EMI communal homes ranked lowest in potential for connection to nature.

Table 2.6 Combined ranking for EMI group homes and EMI communal homes

Home	D	T	F	S	N	C	R	TC	AH	P	BT	SC	G	AG
Score	45.1	37.8	37.3	37.2	28.2	26.7	25.6	25.4	22.7	20.5	21.5	18.1	8.5	6.3
Group or Common	G	G	G	G	G	C	C	C	G	G	C	C	C	C
Residential or EMI	E	E	E	E	E	R	R	R	E	E	E	E	E	E
Ranking - potential for connection to nature	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Combined scores of top 4 and bottom 4 homes	157.4										54.4			

Comparing the sums of the top four and bottom four homes, it can be said that the potential for connection to nature for residents is roughly three times as high in an EMI group home as it would be for the residents in an EMI communal home.

2.8 FINDINGS AND DISCUSSION

The research question was: *Do residential care buildings enable connection to nature? (How or how not?).* This was first addressed by a review of the regulatory framework which was able to identify statutory requirements, regulations and standards applied to

the building and to the running of the home, which appeared to present barriers to providing a connection to nature for the residents. These findings were listed in full in section 2.4, and are identified in brief here:

1. No legal requirement by regulation for care homes to provide access to outdoors for people with dementia...
2. The needs of people with dementia are not considered any differently from non-demented residents...
3. There are no specifications for what people with dementia need or require...
4. Risk avoidance is the benchmark of the regulations...
5. Registration process, by specifying 'care' home, casts residents in the powerless role of recipient of care rather than co-creator in their own well-being...
6. Risks to health and safety limit connection to nature, both in going outdoors and in using natural elements such as plants, soil and water, inside and out...
7. Building regulations for fire safety, if not applied creatively through design, impact the flow of fresh air and daylight within homes...
8. Restricting people with dementia from 'wandering' outside the home is regulated by the registration process under which security measures are specified...

In some of the homes, these barriers were being overcome by good care practice and involvement from family carers. Good practice guides such as 'A Better Home Life' (CPA, 1996), 'Create a Home from Home' (NISW, 1996), 'Homes are for Living In' (Department of Health, 1989) and others (Archibald, 1997; Benson, 2001; McDonald, 2003; NISW, 1988) are routinely used in conjunction with statutory requirements, regulations and standards. In summary, more research is needed to know exactly what the person with dementia requires from both their built and social environment. Such knowledge will help to overcome the present situation in which there is not enough design specification in the building requirements in terms of how the building itself can enable connection to nature. Design will not be influenced unless it is evidence-based.

The second way in which the research question was addressed involved investigating a wide range of dementia care settings in Study Two. The results using SLANT showed a wide range of abilities between the 14 settings to afford the resident the potential for connection to nature, some facilities managing to do it better than others. The top

facilities incorporated nature into many aspects of the site (indoors, outdoors, views, location in the local area, habitat on site and nearby, etc.). The two non-UK examples had ample natural resources on site and nearby, as well as buildings designed so that the residents could take full advantage of the resources. Even an upstairs location was designed sensitively with tall banks of windows, a curved building façade that afforded panoramic views and generously sized balconies with tables and chairs. Every aspect of the outdoor spaces was projected into the interior living spaces by the design of the building. Windows in the communal areas were floor to ceiling, so a person standing anywhere in the room had a view down to the garden areas outside in front of the building. The garden areas were developed with accessible paths, raised beds, seats and tables, and evidence in pictures on the walls and in photo albums confirmed their regular and enjoyed use.

Sites scored poorly for a number of reasons. They might have been beautiful locations or had some nice areas on the site, but the EMI unit itself was poorly sited, given that EMI residents have no liberty to leave the unit. In many cases the property held a wealth of natural resources but accessibility to them for people with dementia was not facilitated. One particular situation arose often enough to make a point of it here. More than one home had a large garden area that was safe and secure. One home had a courtyard garden brimming with flowers and benches which appeared in the advert for the home in a local authority publication. Upon visiting the home it was quickly determined that people with dementia neither visited this garden nor had a view to it. And so, similarly to the other homes with natural areas out of site of the common areas of the EMI unit, residents in these homes probably were unaware that these peaceful and colourful places existed. This occurrence of residents' areas placed out of view of the best outdoor parts of the home was common. In fact, many of the UK examples in the design and layout of the facility seemed to disregard the location of the residents in the planning of the spaces. Simple aspects such as the dayroom or lounge being on the sunny side of the building, ample windows, accessible and safely enclosed garden areas, unlocked doors and attention to views seem to have been disregarded in the design.

Another aspect came to light when there was a change in registration for a home or an addition was built onto the existing home to use as an EMI unit. An example of a negative outcome in terms of connection to nature was found for both of these

scenarios. In one example the home changed the registration on an upper floor from a nursing wing to a residential EMI unit. No changes were made to the building except that the doors were secured and keypads added at each corridor end. Residential clients who were much more mobile than the nursing clients before them, now found themselves on an upper floor with no outdoor access, no adjacent natural areas and limited sensory stimulation due to the placement of the corridor within the larger building. Another example of this change of registration occurred when two residential corridors were divided up and one wing was designated EMI. The room that was chosen for the lounge had been a dining room. It had only one window and that was in the exit door. Management must have been aware there were no windows in the room because a mural had been painted around the solid walls depicting a natural scene. Had this remained a dining room, residents would have been in it considerably fewer hours than they now were with it being the main lounge. SLANT is able to pick up these situations because the rooms are identified where people spend most of their day, and these are the rooms that are scored.

Whether or not there was an outdoor area adjacent the EMI unit was a factor in the potential of the home to provide a connection to nature. 12 out of 14 homes did have this. Buildings with adjacent outdoor areas tended to score high in other areas as well. This seemed to indicate that some homes had an ethos of connection to nature, which was carried like a theme throughout. For instance, EMI units with good connection to outdoor spaces also had live, well-maintained plants indoors. But according to Study One findings, having an outdoor area adjacent the EMI unit did not ensure that residents were able to use it regularly. When the challenging factors are also considered, then the number of sites that had a door to the outside (either the ground floor or a balcony) from the most used lounge drops to little over half (8 out of 14). Of these, the ones having a door that is opened regularly drops to 3 out of 14. So while the floor plan may tell one story, the reality of daily use is practically the opposite.

Since evidence from Study One showed that many factors challenged a person's ability to actually go outdoors, built structures and architectural features largely determine the quality of the indoor nature experience for a resident. The sites that ranked the highest had highly developed building edges (windows, doors and structures such as porches) which played a larger role in enabling a connection to nature than actually going

outside, given the high rate of physical disability and frailty among the residents.

Indicators of good potential for connection to nature were found to be: circulation routes with windows and doors opening to outside areas; provision of balconies and outdoor areas; locations of common rooms at the corner of the building and energy efficient use of day-lighting and solar gain.

Possible reasons for either good or poor potential for connection to nature, depending on the site, were found to be: national and cultural values; number of residents/beds; age of home; building materials; cladding; situation on the lot or in the local area; site topography and the overall building form and mass.

Possible reasons for poor potential for connection to nature are: litigiousness/ risk climate; the EMI concept of locked and alarmed confinement indoors; limited number of windows; small locked entrances versus large entrances with seating areas and blocking an adjacent eyesore which effectively eliminated any view at all.

It was also found that aspects of connecting to nature were not always positive. The less a person is able to engage with and modify their environment, the more inhospitable the natural environment and natural stimuli can become. It can also be said that the less capable a person is physically, depending on their mobility and frailty, the more they require that the building and their place in it be modified. Therefore, the less able the person, the greater the potentially positive or negative effect natural sensations can have on the person. This was seen clearly between homes with different registration criteria. A home with integrated nursing and residential care had a large conservatory room which was too hot in the summer and too cold and draughty in the winter to use, and so it was used only by the most mobile of residents who could enter and leave the room relatively quickly if the temperature changed and they became uncomfortable. But because the people with dementia requiring nursing care were less mobile, as many as twenty people were spending their days in one large room with minimal natural sunlight and fresh air, while the conservatory room went unused by the more frail people, who perhaps under the right circumstances of thermal comfort and intensity of sunlight, could have benefited greatly.

The data showing that there may be a relationship between buildings with good potential for connection to nature and those with high specifics for dementia care (Figure 2.10) must be treated with caution as the tool has not been checked for reliability and because the sample size was quite small. But if this relationship is true, it contributes to the ongoing debate about small-scale domestic homes versus the larger institutional ‘hotel’ style models being found in some new-build homes. Design guidance (section 2.6) recommends small scale, domestic, familiar group living with an emphasis on proportion and scale. But judging from a dashboard survey of larger, newly commissioned buildings, this seems to be less economically viable, as newer homes in England of upwards to 80 beds are replacing 40-bedded homes. Further evidence for the smaller homes was found by comparing combined scores of the top 4 with those of the bottom 4 homes (Table 2.6). It seems from this rough comparison that the potential for connection to nature for residents is as much as three times higher in an EMI group home as it would be for the residents in an EMI communal home. This finding, however tentative, is supported by the research of others in the field. Two studies showing the positive effects of small group living on people with dementia are discussed here to illustrate the derived benefits and contributory mechanisms.

In an ethnographic study by McAllister and Silverman (1999) concerned with community formation and the maintenance of community roles, small group living environments (bungalows for 10 people) were found to have ‘a physical environment that facilitates social interaction, autonomy, and participation in the activities of daily living’ as opposed to institutional settings with ‘physical environments that have limited options (and) may discourage resident interaction and social bonding, thus inhibiting community formation’ (McAllister & Silverman, 1999).

A study by Reimer and colleagues had similar results. They examined a 60-bed purpose-built facility with 10 people living in six bungalows which ‘followed an ecologic model of care that is responsive to the unique interplay of each person and the environment. This model encompasses a vision of long-term care that is more comfortable, more like home, and offers more choices, meaningful activity, and privacy than traditional settings. The intervention demonstrated less decline in activities of daily living, more sustained interest in the environment, and less negative affect than residents in the traditional institutional facilities’ (Reimer et al., 2004).

Both of these studies correlated positive social outcomes for the residents to aspects of the physical environment. Mechanisms cited were a ‘unique interplay between person and environment’ and a ‘physical environment that facilitates social interaction’. As a link has been tentatively made in Study Two between connection to nature and specifics to dementia care (Figure 2.10) and there also seems to be some advantage of group homes over communal homes (Table 2.6), then it follows that if a home wants to provide a connection to nature, smallness of scale and design for small group living would appear to be advantageous. It remains for further study to examine a larger sample in light of these findings.

One strength of the current study was the development and use of SLANT which made cross-setting analysis possible between very different buildings (size, age, country, number of storeys and type of care provision). The need for the development of an assessment tool such as this was indicated by the lack of an existing scale. A further strength of the study is that it has demonstrated an interdisciplinary and ecological way of looking at connection to nature that does not stop at the building wall but considers contributing factors inside and outside the building - even off-site considerations such as habitat and local area ecosystems – which contribute overall to an experience of nature in people’s lives.

There are limitations of the study, primarily the small sample size which makes these findings ungeneralisable to care homes more widely. Furthermore, the tool is newly developed and has no validity or reliability. The findings therefore should be taken with some caution. Future work on the tool itself would involve checking it for reliability. It has however been trialled by a number of professional carers who found using the tool to be educational in terms of getting them to think about the living environment. So as a checklist it was found useful in care practice in raising awareness to the issue of connection to nature for people with dementia.

One further aspect of the study was both a strength and a limitation. Including two non-UK sites in the data collection provided the contrast as these two sites outperformed the UK sites. The drawback is that the results were not specific to the UK alone. Furthermore, there was a range of different types of residential environments included in order to show by comparison the performance of various types of care provision,

building types, etc. It was successful in collecting some comparative data on different types of sites, but the sample was not large enough to have included more than two of each particular type of facility. This remains for future studies to examine a larger sample of each of the specific types of dementia care environments, and then a meta-comparison between facility types would be more robust.

2.9 IMPLICATIONS AND FURTHER RESEARCH

These findings have two main implications for design. First, if the relationship that appeared to exist between group and communal homes is shown in future research to be accurate, then this implies that a connection to nature is more likely to occur if the home is designed for small group living. This is supported by current guidelines as reviewed in section 2.6. A second implication for design is the relatively low score for all the UK sites (no more than 37%) and an overall variance from 6% – 37%. This implies that current design outcomes can be improved by as much as three times if the 300 items in SLANT are included in design criteria.

Creating SLANT has implications for research as it supplies a tool that not only examines in depth an important aspect of the living environment that had previously been dealt with only superficially, it also provides a tool that is designed specifically from the perspective of the person with dementia. Because it is designed on the basis of the affordances for sensory stimulation by the resident as well as an inventory approach to what actually exists, it is not subjective and so it can potentially provide an accurate assessment of this rather important environmental aspect of care provision.

Furthermore, the tool chooses which rooms to measure according to the amount of time a resident actually spends in them. Use of the tool promotes an ecological approach to investigating the environment. Such an experiential assessment enables the most realistic picture of the person's day to day life and hence their movement through and time spend within certain spaces and rooms.

Further research using the tool could include comparative studies in which it might be determined from interviews if people with dementia feel they have a connection to nature in certain homes and then use of SLANT to check for correlations. For instance, during POEs (post-occupancy evaluations) users are generally questioned about their

impressions of spaces, their experiences within them and the uses they can make of them. SLANT may be a way to assess the built environment to corroborate qualitative findings, and by this method, inform design and care practice. Also, with a larger sample a more in-depth study could look at differences within specific building types, as mentioned above.

From the review of the regulatory framework there are implications for care practice. Mainly, the incentive of care staff backed up by management and company policy is needed to overcome environmental barriers for residents. The main areas concerning connection to nature that good practice would affect, according to these observations, were found to be: under-usage of outdoor areas; restrictions on natural elements and confinement as a response to 'wandering'. While these issues were impacted by aspects of the built environment, observations also showed that interventions by family members, professional carers and management were successful in overcoming them. There was evidence of good practice in the general ethos of some of the homes, which was possibly being directed from the management level by use of good practice guides, as mentioned above.

The regulatory review found that more research is needed to know exactly what the person with dementia requires from both their built and social environment. Such knowledge will help to overcome the current finding that there is not enough evidence-based design specification in the building requirements in terms of not only how the building itself can enable connection to nature, but why this is important for care.

As the study employed an ecological approach to understanding the issues involved, it was possible to determine that confinement, for instance, while sensibly instigated for reasons of safety and security, carries with it the need to insure that residents are not left with a barrier, either physical or psychological, preventing them from ever going outside. A conservative estimate is that of the 20 residents observed in the two homes over the course of the PhD research, as many as two thirds did not leave the building for over a year. The data showed many reasons for this, including the fact that some repeatedly refused to go outside when invited. It is beyond the scope of the study to adequately address this issue, but is in need of concentrated attention, as there may be human rights issues involved.

Another implication for care practice is the possible use of a tool such as SLANT for training and education purposes. It has been shown that it has the potential to raise the awareness of staff and management in terms of the importance of nature and the role of staff and management in providing a connection to it for the residents.

Implications for policy, regulations and standards are beyond the scope of the thesis, except to say that research plays a role in influencing these and therefore targeting research into the needs of people with dementia is well-advised.

2.10 CONCLUSION

The chapter began with a review of the regulatory framework of residential care environments in the UK. It was found that requirements for safety tended to keep people confined indoors while care standards did not go far enough to ensure that there was useful, accessible and dementia-friendly outdoor areas to compensate for their confinement. It can be concluded that more research is needed to know exactly what the person with dementia requires from both their built and social environment. Such knowledge will help to overcome the current finding that there is not enough evidence-based design specification in the statutory requirements concerning the real needs of people with dementia.

The chapter continued with Study Two which involved the development of a dementia-specific assessment tool which was previously lacking and therefore necessary for the investigation proposed. It was developed from an interdisciplinary literature review, observations in dementia care facilities both in the UK and abroad, professional expertise in landscape architecture as well as findings from Study One. The tool was composed of over 300 aspects identified as contributing to the potential for connection to nature for people in residential care. Using it to evaluate several sites showed that residential care buildings played a large role in providing or denying the resident such a connection. The following conclusions can be drawn from Study Two:

- There is a large variability in potential for connection to nature between similarly registered homes providing care for similarly-abled residents.

- Homes tended to score strong or weak in all aspects, so it looked like there was a uniformity within the setting itself as having a strength or weakness in terms of potential connection to nature.
- Size of home and number of beds had both positive and negative implications for connection to nature, depending on other aspects of the site, access to outdoors, connection to neighbourhood, view content & linear or radial form.
- Overall, no UK site scored more than 37% in the potential for providing a connection to nature for the residents. Therefore the design criteria known in the literature to increase this aspect for people with dementia is being under-designed and implemented in residential settings by as much as two thirds.
- Findings suggested that the potential for connection to nature for residents can be as much as three times higher in an EMI group home versus EMI communal home.
- Findings also suggested that buildings with high levels of design features specifically good for dementia care also had features affording good potential for connection to nature.

As a result of developing the assessment tool and using it in Study Two numerous barriers to connection to nature within these environments have been identified. Residential care buildings were shown to both enable and challenge a person's connection to nature in numerous ways, several of which had design implications and are therefore of interest for Study Three. In particular, it was observed that people with dementia were often frail or physically disabled and therefore less mobile. As a result of physical limitations as well as the regulatory requirements for safety mentioned above, they will most likely spend an inordinate amount of time on the EMI unit. Furthermore, care practice also contributes to limitations on liberty in numerous ways, which often result in the person with dementia remaining within a fairly confined set of spaces within the course of the day. For such residents, given these constraining factors, successful connection to nature was found to be due in part to:

- Developed 'edge spaces' of the building in terms of aspect, view and seating
- Efforts by carers and relatives

As the third aim of the thesis is to investigate an interaction between people with dementia and nature, facilitated by the built and social environment, and contributing to well-being, Study Three will propose an architectural response to the constraints raised.

2.11 SUMMARY

This chapter began by giving an overview of the regulatory framework within which care is provided in England, the types of accommodations available and the design guidance recommended. These findings as well as the results of Study One were then incorporated into Study Two which compared 14 diverse types of residential care facilities for the purpose of determining the potential of the physical environment to provide residents with dementia a connection to nature. An assessment tool was purpose-built for the study.

The key findings from Chapter Two are thus:

- Research is needed to better inform the regulatory framework on what people with dementia want and require in terms of nature in the built environment.
- A cross-setting analysis of a small but diverse range of sites revealed multiple barriers in these environments to providing a connection to nature and many opportunities for the social network and care practice to overcome them.
- Building regulations for fire safety as well as regulatory requirements for the health and safety of service-users present barriers to connection to nature, but are routinely overcome through good practice in the running of some homes.
- The potential of the environment to provide a connection to nature for people with dementia in some residential care homes could be improved three-fold.
- There may be a correlation between environments affording good potential for connection to nature and those designed along good practice guidelines for people with dementia.
- The potential for connection to nature for residents may be as much as three times higher in an EMI group home as it would be for the residents in an EMI communal home.

The key advances are thus:

- A ‘woolly’ concept such as potential for ‘connection to nature’ has been quantified and a tool for measuring it has allowed cross-setting comparisons.
- Multiple factors of the built and social environment that challenge or enable a connection to nature have been identified.

To accomplish the third and final aim, what remains is to engage with people with dementia during moments of actual enjoyment of nature, to assess the role of the built environment in supporting their needs, and to propose an architectural and possibly also a care practice response to needs identified.

CHAPTER 3 – EDGE SPACE

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CHAPTER 3 – EDGE SPACE

3.0 INTRODUCTION

From the findings of Studies One and Two the ‘edge space’ had been identified as a potential structural feature possessing attributes required for the final aim of the thesis: to investigate an interaction between people with dementia and nature, facilitated by the built and social environment, with the expected outcome of contributing to the well-being of the participants. The first two studies have shown that even with barriers to connection to nature in the homes surveyed, aspects of the social environment can overcome aspects of the built environment, to the benefit of residents. In all but three of the homes examined, the building edge acted as a boundary between the indoor and outdoor area, resulting in locked doors, lack of permeability of the building skin and reductions in liberty. There were inherent difficulties in transgressing boundaries, both psychologically and physically for the residents and the carers. The grounded theory analysis showed this in two ways. First, because *places seem far away*, the inclination was not to go to less-used places, and even used places lost their attraction over time. Second, because *imagined, continued participation* in activities was common, people often declined suggestions to go outside, believing they had already been. But while the edge appeared to present problems it also presented opportunities for wellbeing from the enjoyment of natural stimuli, clearly evidenced in the transcripts quoted in Study One.

This chapter will present Study Three which aims to investigate an interaction between people with dementia and nature, facilitated by the built and social environment, with the expectation that it contribute to the well-being of the participants. The study will require two mechanisms to be performed simultaneously - sensory stimulation from nature and dialogue with another person. Both of these will meet a set of criteria - the spatial criteria for choosing ‘edge spaces’ and the behavioural criteria governing the social interaction between the participants and the researcher.

Although observations contributed in part to the findings in Study One, no data were intentionally gathered from the person *in actual moments of enjoyment*, so the mechanisms whereby nature was actually enjoyed were deduced from the verbal

accounts of the study participants retrospective to the experience they were retelling – essentially, after the fact. Likewise, the role of the building in providing a connection to nature was based on the researcher’s understanding of the building and its observed usage by residents over the years of the research. Study Three can be termed ‘engagement research’ as it attempts to investigate benefit at the moment it is received, instead of upon reflection. To research actual rather than remembered engagement would be less prone to memory effects and bias. Therefore, each participant’s experience would require data both on the interaction (with nature and another person) and on the subjective experience (some form of feedback from the person themselves). Data must be collected during the act of engagement, before any benefit can be claimed.

The aim of this chapter therefore is to present Study Three, an architectural and social response to the limitations identified so far. Literature will be reviewed which provides theoretical support to the concept of edge space. The chapter will then present the study design, data collection and analysis. Findings will be discussed with strengths and limitations of the study as well as implications for design and implications for dementia research. Based on the results a tentative hypothesis will be proposed for use in further research as well as a new discourse analysis method. Conclusions will then be drawn.

3.1 EDGE AS A CONCEPT

This section will look at ‘edge’ as a concept in order to find ways in which it may be relevant to the personal experience of dementia. What does the edge mean and how is it interpreted spatially and geographically? The edge is a boundary expressed by the material positioning of two parts. Heidegger said ‘A boundary is not that at which something stops but, as the Greeks recognized, the boundary is that, from which something begins its presencing’ (Heidegger, 1971, p. 154). ‘Any enclosure is defined by a boundary....The boundaries of a built space are known as floor, wall and ceiling... The enclosing properties of a boundary are determined by its openings... In general the boundary, and in particular the wall, makes the spatial structure visible as continuous or discontinuous extension, direction and rhythm’ (Norberg-Schulz, 1980, p. 13). Edge as boundary is a straightforward interpretation of the external wall of the home. Its openings not only determine the properties of a boundary, but its usefulness for what it affords the resident.

The home itself is also considered an edge between the self and the environment. Home is more than a house or a place, it is a "principal for establishing a meaningful relationship with the environment" (Dovey, 1978).

‘For some people the boundaries of space are crucial. Intervening space, from secluded gardens to the grassed surrounds of residential homes, allows transition from the private world of the domestic interior to the public world of street life. People required different gradients of transition and levels of control over these spaces and correspondingly used, appropriated, or avoided these spaces in different ways’ (Peace et al., 2003).

The edge is also a transitional space between indoors and outdoors at the level of home and neighbourhood. Notable is the work of Christopher Alexander and Jan Gehl (in terms of edge space being where the life is. The concept of the ‘building edge’ as being a lively place was developed by Alexander and colleagues (1977) in the book ‘A Pattern Language’, which states:

‘When it is properly made, such an edge is a realm between realms: it increases the connection between inside and outside, encourages the formation of groups which cross the boundary, encourages movement which starts on one side and ends on the other, and allows activity to be either on, or in the boundary itself.’ (Alexander et al., 1977, p. 755)

Alexander said that buildings are generally thought of as turning inward but must be rethought as also ‘oriented toward the outside’ (p. 753). Within the social fabric of a town or city we can easily see how this occurs in the popularity of sidewalk cafes.

The building edge was also addressed by Danish architect Jan Gehl, in ‘Life Between Buildings: Using Public Space’ (Gehl, 2001). In it he described how buildings generate activity in public areas. He identified three types of activities: necessary, optional and social. Necessary activities are compulsory and take place independent of the exterior environment, such as going to work and shopping. Optional activities, ‘those pursuits that are participated in if there is a wish to do so and if time and place make it possible’ (p. 11), include activities such as taking a walk. Social activities are ‘all activities that depend on the presence of others in public spaces,’ (pp. 11-14) and include both passive and active contacts with other people. A social activity...

‘...takes place every time two people are together in the same place. To see and hear each other, to meet, is in itself a form of contact, a social activity. ...

This connection is important in relation to physical planning. Although the physical framework does not have a direct influence on the quality, content, and intensity of social contacts, architects and planners can affect the possibilities for meeting, seeing and hearing people – possibilities that both take on a quality of their own and become important as background and starting point for other forms of contact.’ (Gehl, 2001, p. 15).

Edge concepts by both Alexander and Gehl are relevant to the experience of the resident as they are spaces in which a person can spend time, where actions can develop and where the person becomes oriented towards the outside. Specific edges such as the porch or the garden have received multidisciplinary attention as spaces in their own right and the uses, meanings and practices associated therein. A notable example is Girling & Helphand’s Yard Street Park, (1994).

Another useful concept of edge is that of liminal space, a term applied to a place such as the seaside. Liminality occurs during life transition and offers ‘liberation from the regimes of normative practices and performance codes of mundane life’ (Shields, 1991). People with dementia are surely experiencing transition, and to turn their thoughts and attention to the world outside the window may afford them a sense of liberation.

3.2 **STUDY THREE: EDGE SPACE - AN ARCHITECTURAL RESPONSE**

While Study One investigated the importance of nature and Study Two assessed the ability of a range of buildings in providing for connection to it, Study Three is designed to explore how the resident might actually use nature and the role of the building edge in facilitating this. Given the opportunity to sense one’s environment and to engage with it bodily, in what ways might a person use this experience to enhance their wellbeing? Study Three addresses the research question: *Why is edge space beneficial for a person with dementia?*

Study One served as a pilot study as it was clear from those semi-structured interviews with residents and family members that the mechanism of dialogue with residents had been well received and appeared anecdotally to enhance their well-being. A research protocol was developed for Study Three, based in part on this early work in Study One, to determine if edge space was a benefit to the participants and if so why. The protocol was intended to operationalise the aim of edge space (to enhance well-being through

connection to nature) by providing standardised criteria for the physical environment and the social interaction. While there was no attempt to standardise measures of cognitive functioning, mood, or behaviour, attention was to be paid to the ways in which communication was affected or possibly enhanced during sensory stimulation from nature. The protocol specified a triangulation of data so that multiple methods of analysis can provide insight into how edge space may have benefited the participants.

Study Three was designed to include dialogues with people with dementia in various edge spaces throughout two residential care homes. Eleven residents (N=11) were selected to participate based on the selection criteria. Dialogues were carried out in eight locations inside and outside the homes. These spaces each met the eligibility requirements set out as essential criteria for edge space. Fourteen dialogues were carried out in total with three participants contributing both an indoor and an outdoor edge dialogue. Findings showed that edge spaces by affording sensory stimulation from nature served to enhance communication, resulting in maintenance of self, thereby contributing to well being for people with dementia (Harris and Sterin, 1999; Tappen et al., 1999; Gillies, 2001; Harman and Clare, 2006).

Theoretical support for the use of edge space during social interaction as a possible mechanism for well-being, and specifically for maintaining a sense of self, will first be presented in section 3.2.1 from five areas of the literature. Following this theoretical background, the aims and methods for Study Three will be given (3.2.2), including:

- Essential and helpful criteria for indoor and outdoor edge space
- Research protocol for before, during and after the experiments
- Criteria for communication during the research interaction
- Essential criteria for inclusion in the study sample

3.2.1 THEORETICAL BACKGROUND

Five strands of theoretical support exist for the proposed study in edge space:

- Personhood and the maintenance of self
- Architectures of dementia care environments
- Psychotherapy
- Social and therapeutic horticulture

- Meditation

The concept of positive personhood, the paradigm of good dementia care, draws on the work of Kitwood, Gilleard and others. Gilleard first conceptualised dementia in terms of ‘personhood’ (Gilleard, 1984), specifically ‘the loss of the person’ (p. 18) and the ‘fading of self’ (p. 10). Gilleard’s conceptualisation, outlined by McKee, has two key issues; a) ‘neurological impairment interacted with one’s sense of self within the context of personal relationships and the wider social and physical environmental to produce the psychological and behavioural patterns known as dementia’; and b) ‘the individual’s capacity for maintaining a coherent personal reality diminishes’ (McKee, 2005). Literature on the interaction of illness and selfhood was traced by McKee (2005) from Foulds (1976) who addressed the impact of illness upon the self in terms of its ‘capacity for assembling a sense of personal reality’ (McKee, 2005). Kitwood & Bredin expanded this concept by saying that ‘the key psychological task in dementia care is that of keeping the sufferer’s personhood in being’ (Kitwood & Bredin, 1992).

Gilleard’s conceptualisation connects the physical environment and the sufferer’s personal reality and most importantly this is accomplished through interaction. The *quality* of the interaction largely determines the positive or negative effect on personhood, which is by definition social, because it ‘emerges in a social context...guaranteed by the presence of others...relationship comes first, and with it intersubjectivity...’ (Kitwood & Bredin, 1992). By 1997, Kitwood had defined personhood as ‘...a standing or status that is bestowed upon one human being by others, in the context of relationship and social being’ (1997, p. 8). Others have also said that ‘the threatened loss of self does not appear to be linked to the ‘progress’ of the disease but rather to the related behaviour of significant others’ (Bond and Corner, 2001, p. 104). There is clearly a link between engagement with others and well being that in dementia is specific to a person’s ability to maintain a coherent sense of self.

Discourse analysis of conversations by people with dementia has provided insight into their maintenance of self and lends theoretical support to the focus and methods of Study Three. Sabat and colleagues (Sabat and Harré, 1992; Sabat and Collins, 1999; Sabat, 2001; Sabat, 2002; Sabat et al., 2004) have been developing through the use of social construction theory (Coulter, 1979; Harré, 1983, 1991) the various selves of a

person with dementia and the support or threat posed by the *focus* of the attention of others. This body of work has unpacked the concept of ‘malignant social psychology’ (Kitwood, 1990, 1998; Kitwood and Bredin, 1992), ‘a term used to describe a host of ways in which the afflicted individual is, without malicious intent, depersonalized, invalidated, and treated dysfunctionally in one way or another by healthy others’ (Sabat, 2002, p. 26). Central to the use of social construction theory in discourse analysis of people with dementia is concern for the loss of Self 3 (different social personae such as ‘good neighbour’ or ‘loving dad’ constructed during social interaction with others) through ‘the lack of cooperation that the afflicted person is given by others in his or her attempts to construct healthy, more admirable social personae’ (ibid. p. 28).

Characteristic of this area of research is the analysis of conversations between a researcher and a person with AD with whom the researcher had developed a long-term, trusting relationship through conversation – a relationship not characterized by a dynamic such as ‘researcher-patient’ but rather by one of ‘person-to-person’ (ibid., p. 28). Similarly, the participants in Study Three had been known by the PhD candidate for at least 2 years at the time of the dialogues in edge space. Likewise, his associations with the residents in Home One and Two had been ones of acceptance and trust. Importantly, the research on selfhood in dementia emphasizes that dysfunction ‘on the basis of standardized tests... does not in and of itself preclude the existence of any of the aspects of selfhood...’ (ibid., p. 35).

Recent evidence from a study involving people with dementia in residential care supported the relevance of a socio-biographical theory of self (Surr, 2006) through the use of unstructured interviews with 14 people with dementia.

‘Relationships with family, other residents and care home staff were important for maintenance of self. Social roles related to work, being part of a family, caring for others and being cared for, were particularly significant for self in this group ... The creation of a life story, stories of selected life events, and the telling of stories with possible metaphorical interpretations were also important for the maintenance of self’ (p. 1720).

Surr’s work drew upon theories of interpersonal relationships for maintenance of self, including attachment (Bowlby, 1979), ‘positive regard’ (Rogers and Stevens, 1967) and

Winnicott's caring environment (Davies and Wallbridge, 1981), which 'suggest that quality of interpersonal relationships is an essential component of preservation of self and therefore should be considered a crucial element in dementia care that aims to uphold self' (p. 1721). She also drew upon the work of Hegel (Singer, 2001) and Buber (1970) concerning recognition and equality as being key to development and maintenance of self. Also, relevant to the life experience of people in residential care, she draws support from Laing (1969) who 'argued that loss of self may occur if others accord a person no recognition and their relationships allow them only to receive and not give' (p. 1721).

Of relevance to the use of edge space, the transition between indoors and outdoors, is work by Cohen-Mansfield, Golander and Amheim (2000) on domains of role-identity. Surr commented that their research 'highlighted the considerable impact of living in a nursing home on role-identity, with activities taking residents out of the nursing home environment being those most likely to support self' (2006, p. 1722). This reinforces earlier work by Goffman (1961) which argued that institutional living 'holds great potential for loss of self' (Surr, 2006, p. 1723). One reason cited for this was restriction on access to the outside world.

The research cited above concerning personhood and maintenance of self contributes to the theoretical foundation for Study Three. The second theoretical area, the architectural theory of dementia care environments, draws on early work by Lawton and others involving older people. This includes the environmental docility hypothesis in which 'limitations in health, cognitive skills, ego strength, status, social role performance or degree of cultural evolution will tend to heighten the docility of a person in the face of environmental constraints and influences' (Lawton & Nahemow, 1973). The environment is therefore seen as a more potent determinant of behavioural outcome as personal competence decreases. So environmental prosthetics would have a disproportionately strong and positive effect on impaired older people's behaviour (Lawton, 1990). Furthermore, Lawton's concept of 'person-fit' has been used to guide the design of dementia environments in order to enhance functioning. Based on this work, one can expect a positive environmental intervention to support a person of impaired abilities.

The third area, the approach to well-being through psychological therapies, is becoming more widely practiced. A review of psychosocial interventions for people with dementia described current methods, including the psychodynamic approach, reminiscence and life review, support groups and cognitive/behavioural therapy, behavioural approaches, memory training and reality orientation (Kasl-Godley & Gatz, 2000). Cognitive stimulation therapy (CST) is a revived form of reality orientation (Woods, 2002) and has been shown to significantly improve cognition and quality of life in older people with dementia, and has similar aspects to what is being proposed in Study Three. For instance, CST involves

‘gentle non-cognitive exercises to provide continuity and orientation...focused on themes, such as food or childhood, allowing reminiscence as well as discussion of the present day...multi-sensory stimulation where possible and encouraged the use of information processing rather than solely factual information. A range of activities was used.... (Spector et al., 2003, p. 253).

Cognitive-behavioural therapy has proved effective for depression (Scholey & Woods, 2003) and relaxation benefits people experiencing anxiety. Such therapies employ the mechanism of psychological and emotional engagement through various forms of human-environment interaction. This interactive aspect provides support for initiating interaction in Study Three with the expectation of beneficial outcomes.

The fourth area of theoretical support is drawn from the practices of social and therapeutic horticulture (STH), in particular the triangular dynamic wherein the person is engaged with both natural elements and with another person. The general model for the interactions that occur in STH is for the client and the therapist to converse while engaged in horticultural activities. The plant becomes the focus and the client is able to use nature as a metaphor to reflect on their personal situation and to talk about it. In so doing, they communicate their feelings and engage on a personal level, in the hopes of working through issues or emotional difficulties they may be experiencing. During this process, nature is used as a therapeutic tool and human interaction in relationship is the mechanism by which this occurs. Actual participation in activities of horticulture, such as planting, potting or caring for plants, is normal practice during a session of STH. This interaction occurs indoors or outdoors by using a range of different plant materials and activities in various settings. Similar to STH, the proposed experiments in edge space were designed to see if nature might be useful to people with dementia as a tool to

facilitate personal communication. Unlike STH, no hands-on horticulture was proposed or expected. The aim was for the participants to be exposed to natural elements during a dialogue, rather than to be physically working with natural elements during an activity. Therefore, the proposed edge space study draws from the theory and practice of social and therapeutic horticulture the concept of human engagement in proximity to nature for therapeutic benefit.

And lastly, theoretical support for Study Three also draws upon recent work in the area of meditation for people with dementia. People with advanced cognitive impairment can be instructed in meditation, can practice with support and guidance, and can benefit by decreased agitation, increased group participation, improved self-control and increased relaxation (Lindberg, 2005). Those with dementia were able to remain in a relaxed state and tolerate meditative experiences longer than those who were cognitively intact (Lantz et al., 1997). The positive effects of meditative experiences persisted two or more hours after completion of the meditative practice (Carnes, 2001). Meditation or spiritual practices can be learned because guided imagery is not dependent on stored memory. Guided imagery allows for creative use of the senses which serves to diminish the person's sense of isolation. During the meditation or spiritual practice the person is fully active and directive. In this way, participation promotes relational, emotional and spiritual well-being (Lindberg, 2005). This research on meditation and guided imagery for a person with dementia provides theoretical support for the edge space study in so far as it demonstrated creative use of the senses facilitated through social interaction with another person.

The theoretical background for the edge space intervention has been provided above drawing support from five separate strands – positive personhood and the maintenance of self, environmental prosthetics and 'person fit,' psychosocial therapies, social and therapeutic horticulture and meditation or guided imagery. Based upon these the intervention was expected to be beneficial, although proving that is not an aim.

To summarise the theoretical assumption for the study: in a social context, nature could be important to a person with dementia by assisting them to maintain their self-identity. As positive personhood is recognised as a measure of well-being for a person with dementia, and social interaction is the mechanism by which personhood is

accomplished, it seemed possible that edge space may provide the physical setting within which the mechanism and the outcome could be realised. That it did actually contribute to positive personhood would no doubt be impossible to prove within the scope of this thesis. What will be attempted is the development of indicators of the person's ability to maintain a sense of self.

3.2.2 AIMS AND METHODS

The aim of Study Three is to investigate an interaction between people with dementia and nature, facilitated by the built and social environment, with the expectation (based on the literature and the previous two studies) that the interaction will contribute to the emotional and spiritual well-being of the participants. The intention is not to measure well-being to see if the interaction affected it, but to provide the physical and social criteria for such interactions to occur and to construct and demonstrate an analytical tool that can be used as an indicator of the person's sense of self. This analytical tool will build upon previous discourse analysis work of Small (1998) and Sabat and Harré (1992).

The primary method for data gathering during study three is social interaction between the researcher and the people with dementia. 'The commitment to understanding participants' perspectives implies investigating the experience, meanings, intentions and behaviour of people with dementia on their own terms. This inevitably means using fieldwork methods which get the investigator close to the subject of study' (Bond and Corner, 2001, p. 106).

Referring back to Study One methods section (1.2.5.1 Observational Research and the Case Study Approach), to the discussion of objectivity, the researcher's role had shifted by Study Three from 'complete observer' to 'observer-as-participant' (an outsider who becomes a member of the community)' (Angrosino, 2004, p. 754). This was essential to the success of the edge space dialogues. For one thing, 'the presence of both public and private accounts (Cornwell 1984) within participants' accounts, makes it difficult for the investigator to interpret the accounts they are given. Even within qualitative research, the private account is securely hidden until the investigator is able to establish empathy

and close relationships with participants, processes which are not always feasible' (Bond and Corner, 2001, p. 107).

Unlike the semi-structured interviews of Study One involving an interview schedule with pre-determined discussion topics, Study Three endeavoured to generate dialogue with no particular agenda. This shifted the intention from gathering data to initiating social interaction for its own sake - the interaction being the object of interest, rather than the topic being discussed. Support for this approach can be found in Surr's recent work with participants with dementia in residential care (2006). To begin, 'the interview was opened with a question such as 'How are you?' The intention was to, as much as possible, allow the participant to direct the interview and set the agenda' (p. 1724).

Based on the theoretical background presented in section 3.2.1, the study required two mechanisms to be performed simultaneously - sensory stimulation from nature and dialogue with another person. To set up such an interaction required that two main sets of criteria to be met - the spatial criteria for choosing 'edge spaces' and the behavioural criteria governing the social interaction between the participant and the researcher. The next two sections present these, as well as the criteria for the study sample.

3.2.2.1 CRITERIA FOR INDOOR AND OUTDOOR 'EDGE SPACE'

The dialogues were to be held in a space, either indoors or outdoors, which afforded connection to nature as well as where the participants felt comfortable to spend time, talking to someone in response to their experience if they wished. Based on the literature reviewed, observations in the homes and the results from Study Two, the following sets of essential criteria define indoor and outdoor edge spaces. The definitions that follow are derived from observing older people using spaces in the study homes during Study One, as well as design guidance on what older people require of their buildings (Torrington, 1996, 2004). Essential criteria pertain to the built environment, and all spaces chosen as locations for the experiments all met these essential built environment criteria. Helpful criteria for indoor and outdoor edges are also given including aspects of both the built and the natural environment.

INDOOR EDGE SPACE - Essential Criteria

1. An **indoor space**
2. within the **edge** of a room
3. with **furniture** for two people to sit
4. or a **clear space** to stand **with support**
5. **within 1.0 m** of each other
6. **angled** to enable eye contact
7. having a **window** (or an opening) to the outside
8. (or having a **mirrored image** of a window)
9. within their **90 degree** field of vision.

TERM	DEFINITION
indoor space	Indoor space is floor space inside a building of at least 3 square metres enclosed by a combination of walls, doors, windows and a roof.
edge	<p>To determine exactly where the edge is located and how much space it encompasses, it is necessary to look at the external walls and calculate roughly the ratio between transparency and opaqueness (where the wall is perforated versus where it is solid). This will be determined by comparing the width of glazing (window space) to the width of non-glazing (wall space). The window height must be typical for a domestic living space (at least 100 cm, usually 110-130cm). If the window in a room is not at least 100cm in height then consider the room to have no edge. An example of this would be a room with windows only in an emergency exit door and none in the walls themselves, or a room with only clerestory windows. In the calculation, the area of the wall above and below the window is ignored. It is the width of window space that matters. Basically, the wider the window space in a room, the larger the portion of the room that can be considered the edge. In most residential care homes, the edge of a room will only be a portion of the room closest to the window, but in some cases the edge is the entire room. The aspect (direction the window faces) is also taken into account, with north-facing windows being calculated differently, since direct sunlight is excluded from entering the window. Curtains and drapes that block light are counted as part of the wall width. Sheer or net curtains that allow light to pass through are considered part of the window width. Apply the following rules to determine the location of an indoor edge.</p> <p>For south-, east- or west-facing windows, if their total width is:</p> <ul style="list-style-type: none"> • at least 1/3 of the overall wall width, the edge is the third of the room closest the windowed wall; • at least 1/2 of the overall wall width, the edge is the half of the room closest the windowed wall • the whole wall or on more than one wall, the edge is anywhere in the room. <p>For windows on north-facing walls, edge is only as deep as the width of the widest window. So if on a north facing wall the window is 3 metres wide, the edge extends 3 metres into the room, starting at the windowed wall.</p>
furniture	Two chairs (permanent or moveable) or a bench, sofa or settee large enough for two people, or a built-in seating area such as a window seat.
clear space with support	Floor space devoid of furnishings where there is at least 2 sq metres in which a person can 1) stand upright under their own accord, 2) stand upright by the use of a walker or zimmer frame assistive device, 3) stand upright by holding on to the arms or backs of furniture, or 4) use a wheelchair.
within 1.0 m	When sitting comfortably, the heads of the two people are within 1 metre of each other to facilitate communication and to place them within the spatial proximity of personal space.
angled	An angle of less than 180 degrees results if a line is drawn across the two chairs from side to side. In other words, chairs are turned slightly towards each other to facilitate eye contact between the two people and to enhance their ability to hear each other. They do not both need to be angled. One can be sitting straight and the other can be angled towards it.

window	A clear glazed or unglazed opening in the exterior wall through which light can pass and through which the outdoors can be viewed (i.e. not frosted, stained or etched glass).
mirrored image	A mirror on a wall that reflects the light and view of a window towards the person is counted as window space. For instance, if the chair is placed with its back to the window so the window is out of view of the person, but through a mirror on a side wall the person can see a reflection of the window and therefore is afforded reflected view and light, then the width of the mirror is added to the calculated width of the windows. So a meter-wide mirror on a wall perpendicular to the window wall adds a metre of width to the windows.
90 degree	When sitting facing forward, without moving their head, a person has a 60 degree field of view. By moving their head slightly that field increases. A 90 degree field of vision extends 45 degrees to the right and left of centre and requires minimal moving of the head.

INDOOR EDGE SPACE - Helpful Criteria

Built Environment

Seating

- Choice – Seats facing in at least 3 directions are located in the room
 - Seats in at least 2 different styles or materials exist, catering to different preferences
 - Seats are arranged for individual or group seating in rooms with 5 or more chairs
- Comfort - Physically provided through textures & materials similar to a person's own furniture
- Physical support for older people -
 - Chair back upright with lumbar support
 - Chair arms extend slightly beyond the length of the seat (by a minimum of 100 mm)
 - Seat height at least 400-500 mm from the floor
 - Sturdy, solid construction offering support for a person while steadying themselves, walking by, standing by it, or pushing themselves up from a seated position
- Visibility – seating can be seen from areas outside the room, such as the adjacent corridor
- Proximity – Seating is near to a small table or ledge where a cup, plate or book can be placed

Windows

- More than the number required by the building regulations for a room of that size and use
- Glazing bars not at eye level when sitting or standing
- On more than one wall
- With opening hardware that is easy to use - not stiff or heavy or requires staff or a key to open
- In any common area any day at least one window can be found that is open
- Complex with panes that open in more than one direction to catch fresh air and bring it inside
- With windowsills or handrails 60-90 cm from the floor for physical support while standing
- Windowsills low enough (<601mm) to see out from seating positions
- In internal walls to allow people in the corridor to see in and preview the edge space

Doors

- Those into the room are not locked, are propped open or are left standing open so people can easily see into the room and do not need to open a door to enter
- Those into the room have windows in them to make previewing the space possible

Acoustics

Audibility

- To increase audibility of conversation there is a mixture of soft and hard surfaces allowing both the high and low frequency sounds to be heard
- Loud, abrupt, meaningless sounds (buzzers & alarms) occur less than once an hour
- Loud, steady, meaningless sounds (hoover/carpet cleaner) occur less than twice a day
- Clangs, rattles or bangs (plates, cups, cutlery, trolleys) are not audible in lounge areas

Meaningful sounds

- From inside with the windows closed, church bells are routinely heard
- From inside with the windows closed, a passing train whistle is routinely heard

View Content

- Contains visible objects (no smaller than a bird and with the potential for movement) less than 10 metres from the window
- Contains visible objects (no smaller than a car and with the potential for movement) as far away as 100 metres from the window
- Contains objects (no smaller than a farm or school) as far away as a mile from the window
- Urban elements such as buildings, traffic, buses, bridges or roads
- Transport locations such as a taxi stand, train station or bus stop

- Rural elements such as tractors, farmhouses, barns, sheds, silos
- Elements with potential to move in the wind (ornamental grass, flags, washing line)
- Playgrounds, day centres or activity areas for children
- (daily) Pedestrian activity such as walking a dog or children going to school
- People parking and getting in and out of vehicles
- People going in and out of houses or shops
- (weekly) Personal transportation such as bicycles or skateboards
- Domestic activity such as people in their gardens, talking over the fence

INDOOR EDGE SPACE - Helpful Criteria

Natural Environment

View Content

- At least 1/4 of the total view from the window is comprised of the sky (Measure this by standing within one metre of the window and drawing the window panes. Then draw a line across the panes where the land and sky meet. Is the sky portion at least ¼ of the total?)
- Landscaped areas including gardens, trees, lawns and planting beds
- Water bodies (lakes, ponds, rivers) or features (fountains, fish ponds, waterfalls)
- The horizon (enables seeing to a distance, sunrise or sunset)
- Evergreen and deciduous trees, shrubs and groundcovers
- A combination of hardscape, lawn and planting areas
- Plants that flower such as annuals, shrubs, vines and fruit trees
- Wildlife habitat – plants for nesting, foraging, food, nectar and shelter
- Garden elements such as soil, compost, mulch, gravel, pebbles and sand
- An ecosystem such as a wetland, coastline, woodland or moorland
- Rural elements such as fields, stone walls, sheep, cows or horses
- Rural elements such as stone outcrops, valleys, hills or mountains
- Sports ground, fishing pond, a bowling green or a park

OUTDOOR EDGE SPACE - Essential Criteria

1. An **outdoor space**
2. between **20-30 degrees**
3. with **furniture** for two people to sit
4. or a **clear space** to stand with support
5. **within 0.5 m** of each other
6. **angled** to enable eye contact
7. within **10m of the door** and
8. within **view of the entrance**

TERM	DEFINITION
outdoor space	Outdoor space is floor space outside a building of at least 3 square metres not enclosed by walls, doors, windows or a roof.
20-30 degrees	Measured with a thermometer placed on the seat where the person will be sitting
furniture	Two chairs (permanent or moveable) or a bench large enough for two people, or a low wall, or a built-in seating area such as raised beds with a wooden seating area built into it.
Clear space with support	Ground or paved space devoid of paraphernalia where there is at least 2 sq metres in which a person can 1) stand upright under their own accord, 2) stand upright by the use of a walker or zimmer frame assistive device, 3) stand upright by holding on to handrails or similar outdoor structures, or 4) use a wheelchair.
within 0.5 m	When sitting comfortably, the heads of the two people are within a half metre of each other to facilitate communication and to place them within the spatial proximity of personal space. The reduced distance apart compared to indoor space reflects acoustical challenges associated with being speaking and being heard and understood outdoors.

angled	An angle of less than 180 degrees results if a line is drawn across the two chairs from side to side. In other words, chairs are turned slightly towards each other to facilitate eye contact between the two people and to enhance their ability to hear each other. They do not both need to be angled. One can be sitting straight and the other can be angled towards it.
10 m of the door	If measured by an imaginary straight line, the distance between the seats and the door that the person came through to come outside is not over 10 metres.
view of the entrance	From where the people are sitting there should be a clear view to the entrance leading back inside. The entrance means not only the door but the door frame, roof, porch, handrail and ramp. The door itself does not have to be visible but aspects are clues to its whereabouts.

OUTDOOR EDGE SPACE - Helpful Criteria

Built Environment

Seating

- Choice – Seats facing in at least 3 directions are located in the edge
 - Seats in at least 2 different styles or materials exist
 - Some seats are permanently fixed and some are moveable
 - Seats are arranged for individuals, pairs of people or group seating
- Comfort - Physically provided through textures & materials similar to a person's own furniture
 - Seat material does not conduct heat or cold
 - Seating is sheltered or partly enclosed with an arbour, trellis, awning or umbrella
- Physical support for older people -
 - Chair arms extend slightly beyond the length of the seat (by a minimum of 100 mm)
 - Seat height at least 400-500 mm from the floor
 - Sturdy, solid construction offering support for a person while steadying themselves, walking by, standing by it, or pushing themselves up from a seated position
- Visibility – seating can be seen from rooms inside the home and from the adjacent corridor
- Proximity – Seating is near to a small table or ledge where a cup, plate or book can be placed

Doors

- Outside from the EMI unit are unlocked daily, propped open or have automatic openers

Paths

- Accessibility standards are met in the area for gradients, surfaces and handrails
- Paths exist with stopping, seating or leaning points every 10 metres

OUTDOOR EDGE SPACE - Helpful Criteria

Natural environment

Outdoor area (or the view beyond the edge) includes:

- Perennials or annuals
- Vegetables, herbs or fruit
- Evergreen and deciduous trees, shrubs or groundcovers
- A combination of hardscape, lawn and planting areas
- Sensory plants such as herbs or fragrant plants
- Plants that flower such as annuals, bulbs, shrubs, vines or fruit trees
- Wildlife habitat – plants for nesting, foraging, food, nectar or shelter
- Garden elements such as soil, compost, mulch, gravel, pebbles or sand
- An ecosystem such as a wetland, coastline, woodland or moorland
- Rural elements such as fields, stone walls, sheep, cows or horses
- Rural elements such as stone outcrops, valleys, hills or mountains
- Sports ground, fishing pond, a bowling green or a park

NOTES:

1. Helpful criteria listed under Natural Environment refer to nature defined in the Introduction as 'plants, animals, earth, water, sun, sky, air, season and climate.' Some of these criteria place natural elements (specifically plants, earth and water) within or near the edge space. Other criteria invite nature into the edge through borrowing visually from the local area, or by creating habitat in or near the edge space. These natural elements of plants, animals, earth, water, sun, sky, air, season and climate will also be used to organise the analysis of natural environment data. This provides consistency and contributes to the overall generalisability of the study.
2. Several aspects of nature that are sensed (sun, sky, air, season and climate) cannot be designed directly into the landscape and so the potential for a person to experience such things is provided for through the

Helpful Criteria for the Built Environment. For instance, weather and climate are part of nature and can provide an enjoyable sensation. They can also be a detriment to going outside. Aspects of view content such as amount of sky visible, view of the horizon and view into the distance can afford such sensations.

Once the essential criteria were met, observations were carried out in the two homes to determine: 1) if and where such spaces existed, 2) what was the current level of use of such spaces, 3) at which times of day these spaces were used or vacant, and 4) which residents regularly frequented these spaces. Once aspects such as the location and use of edge spaces were familiar to the researcher, it was possible to identify opportunities for interaction when participants, places and timing coincided. This was necessary because some participants would be approached once they were already in the edge space, but others would be invited by the researcher to have a conversation, and they then would go together to an available edge space. A protocol was established to systematise and facilitate the various steps. The following section itemises the research protocol for setting up and conducting these edge space interactions. These include:

- Preliminary tasks – groundwork for the research
- On the day of the experiment – setting up the interactions
- Conducting the research – essential communication criteria for interactions
- Final tasks upon completion of experiments

3.2.2.2 RESEARCH PROTOCOL AND COMMUNICATION CRITERIA

Communicating well with people with dementia requires patience, time, skill and practice. As social interaction is a key part to the experiment and not simply a method of data gathering, this section presents the research protocol and the communication criteria required from the researcher during the interaction. Two main sources inform these practical and theoretical aspects of the methodology. Theoretical aspects of facilitating interaction are presented below, drawing upon the research on meditation and guided imagery mentioned above. Practical aspects of communicating with people with dementia are taken from the dementia literature. They are presented below as essential communication criteria for the interactions, and included in the protocol.

Similar to the role of the person leading a guided imagery session or a meditation, the researcher must act as a catalyst to the interaction by empowering the participant to be fully active and directive (Lindberg, 2005). In this way, it is intended that the participant will respond to stimuli or engage in dialogue with creative self-expression, using the

opportunities the moment affords as they see fit with no predetermined interview schedule to which they must respond. Facilitating an enjoyable and potentially beneficial interaction is the intended outcome, which is similar to the intention of a guided imagery session. For this to be possible for a person with dementia, the researcher must ‘meet them where they are’ psychologically. Hence, the protocol involves a gentle and flexible approach to communication rather than a directive or formulaic one. Essentially, the dialogue is intended to occur informally with the feel of a friendly chat, giving the participant the message that they are in charge and that they can lead the dialogue wherever they wish, not that they are being interviewed and there are right and wrong answers. People with dementia in residential care are often concerned that they are doing the right thing and acting appropriately. This concern can be laid to rest if the dialogue is directed by the person, freeing them to be relaxed and creatively engaged with their environment.

Guidelines for communicating with people with dementia are found in guides for family carers, training literature and coursework for dementia care professionals and various organisations (Alzheimer’s Society, 2005; Feil, 1993; Mace, 1990; McDonald, 2003; Powell, 2000; Sheard, 2004). In preparation for the work with people with dementia the researcher received specialist training including a practice seminar from Dementia Voice. Criteria from these sources are compiled within the list below.

RESEARCHER - PARTICIPANT INTERACTION Protocol

1. Preliminary tasks – groundwork for the research
 - Gain appropriate ethics approval through university research governance procedure
 - Gain permission to carry out the research from the home manager
 - Produce a valid ID for the manager to conduct a security check
 - Log into the visitors’ book each time you visit or leave the home
 - Meet the care staff and through them meet the residents and relatives/advocates
 - Determine from care staff / management a potential sample of participants (see below)
 - Consider use of an interpreter if English is not the person’s first language
 - Determine if residents are able to give written consent
 - If they are not able, seek written consent from family, friends or advocates
 - Establish a rapport with the residents through a friendly, professional approach
 - Determine the best time of day for the dialogues to be carried out (i.e. avoid mealtimes)
 - Visit the home weekly at least three times prior to the edge space experiments
 - During visits speak with staff, learn their names and gain their confidence and support
 - Become familiar with the daily routines (meals, teas, tablets, breaks, changeovers, etc.)
 - Speak with residents who you’ve selected to participate to establish a familiar rapport
 - Specifically for interactions in external edge spaces:
 - Plan for these to occur during the warmer months

From care staff, determine which residents might enjoy and be able to go outside
Arrange support for physical disability if required (wheelchair, carer assistance, etc.)

2. On the day of the experiment – setting up the interactions

If the person is in their private room:

Determine from carers that the person has free time (not about to have a bath, visitor)

Have the carer introduce you by knocking on the door and asking permission to enter

Greet them by using an appropriate title (Miss/Mrs) and attempt to make eye contact

Allow them time to acknowledge your presence by returning eye contact/smiling

Once eye contact is established, introduce yourself in a friendly manner and ask ‘May I speak/visit with you? Is now a good time?’

If they say ‘yes’ and they are not physically mobile, and there is an edge space in their room (you will know all this ahead of time), ask ‘May I come in?’

Squat down to their level if they are sitting

Remind the person who you are and when you spoke to them last (if you have)

Remind them of (or explain the reason for) your visit

If they say ‘yes’ and they are ambulatory, and there is no edge space in their room but there is one available nearby, ask ‘Shall we go into the lounge (or other space)?’

If the person is in a common area:

Approach them slowly, make eye contact and invite them to talk with you (as above)

Get on their level physically, remind them who you are and the reason for the visit

Gain necessary verbal and/or written consent from the person or advocate

Relocate to an edge space if not already in one

Determine if the person is more comfortable standing or sitting

Ensure edge space criteria are met for seating, positioning in room, etc.

If their bed is the only place to sit, try to have a chair brought into the room

If you must sit on the bed, ask permission from the resident before doing so

Request permission to audiotape; set up recorder and microphone

Eliminate conflicting indoor noises (close door if needed, turn off radio/tv)

Eliminate indoor visual distractions (traffic in corridor, other residents, etc.)

Allow ample time for transferring and travel if relocating to an external edge space

Ensure person is properly dressed for going outside (visit the edge space ahead of time to ensure physical criteria are met, chairs are wiped clean, it’s warm enough, etc.)

Make a staff person aware that a resident is going outside, where and for how long

3. Conducting the research – **Essential** communication criteria for interactions

Person with dementia

Physical

Able to stay alert, awake and aware for 15 minutes

Able to sit upright in a chair or stand upright for 15 minutes

Is comfortable and not in pain

Sensory

Glasses are on and clean if needed

Able to adequately see visual stimulation

If visually impaired, still able to enjoy and respond to a view

Hearing aid if needed is in, clean and properly adjusted

Privacy and control

Able to have the conversation be private, not overheard

Able to close door, limit intrusion from other people, activities

Able to choose a place that is comfortable and familiar

Able to choose to end the interaction at any point

Position of researcher

- Sit or stand on the same level as the person or lower
- Sit on the person's best side for hearing and seeing ('my good ear')

Communication

Language

- Use language at the level the person can understand
- Speak slowly and clearly and enunciate
- Ask them to repeat what they said if necessary
- Speak in a friendly, relaxed and respectful manner

Questioning

- Try to avoid asking questions that have a yes/no answer
- Try to avoid asking for specifics like names and places
- Avoid asking 'do you remember...?' questions

Timing

- Allow time for the person to respond to questions
- Allow lulls in the conversation for person to formulate their thoughts
- Do not keep them too long for any one interaction
- Interaction should last at least 15 minutes to be included in the research
- Longer interactions are encouraged and may be conducted in parts

Non-verbal communication

- Be alert to non-verbal communication which may express needs
- Be alert to signs the person needs to stop, leave or go to the toilet

Go with the flow

- Follow the person if the conversation stops, starts or changes direction
- Do not expect that everything said must 'make sense'
- There are no wrong answers
- Facilitate their enjoyment of nature and the time spent with you

4. Final tasks upon completion of experiments

Thank the participant

See them safely back to where they need to be

Inform care staff of your actions, whereabouts and when you are leaving

Thank staff and management for their cooperation

Sign out of the visitor's book before leaving the building

Follow up by phone the next day to see if there were any repercussions of the study

3.2.3 STUDY SAMPLE

In the two participating homes, a cohort of twenty residents with dementia resided.

Participants were chosen using a criterion sampling approach (Miles and Huberman,

1994) on the basis of the criteria below. Of the twenty residents a total of 11 met these criteria and participated in the study.

Essential criteria for participants to be part of the study sample:

- have a diagnosis of dementia of any type
- express a willingness to talk to the researcher

- able to stay alert, awake and aware for at least 15 minutes
- able to sit upright in a chair or stand upright
- able to comprehend and respond to verbal communication
- able and willing to give verbal consent to participate
- able and willing to give written consent to participate (or their advocate is)

Demographically the sample contained one person with mild dementia, one with severe dementia and the rest were in the mild to moderate stages. One participant was male and all were Caucasian. The ages ranged from 66 to 89 with the median age of 82. (The younger person who was 66 had a dual diagnosis of dementia and learning difficulties. The median age without the outlier is 84. Some of the participants gave a dialogue in both indoors and outdoor edge space or inside in two different rooms. Early intentions were for more people to do this given the limited pool of eligible candidates, but time constraints and the logistics of mobility intervened. It was decided to keep the extra dialogues in the sample anyway to bolster the sample size.)

3.2.4 DATA COLLECTION

Fourteen unstructured dialogues with eleven people with dementia were carried out and audio-taped in two residential care homes. Dialogues occurred indoors in spaces meeting the essential criteria for an indoor edge space or outdoors meeting the essential criteria for an outdoor edge space. Tapes were transcribed and analysed. The study was designed to collect data from four different sources:

- Data about natural stimuli gathered through observing the environment where the dialogues occurred (note taking and photographic evidence)
- Characteristics of the rooms, buildings and outdoor areas that facilitated the interactions (drawings, photographs and building surveys)
- Data about natural stimuli mentioned by participants during the dialogues (textual data derived from dialogue transcriptions)
- Textual data from the transcribed dialogues

3.2.5 ETHICS AND CONSENT

Since Study Three was a continuation of Study One within the same two care homes and with the same cohort of participants, no further COREC ethical approval was necessary beyond the earlier permissions applied for and granted during the INDEPENDENT Project. University research committee approval was sought and gained according to research governance specific to postgraduate research projects. There was also the need to gain ongoing consent from participants throughout the research. Written consent was gained prior to the dialogues either from the residents or their relative/advocate. Verbal consent was achieved by asking the participants prior to and during the dialogues if they wanted to continue to participate.

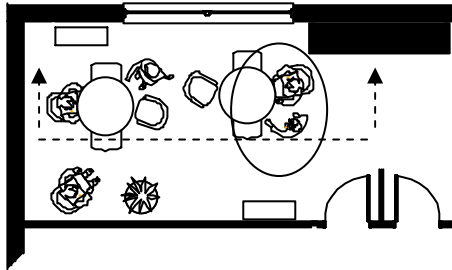
3.2.6 STUDY SITES

The study took place on the EMI units of residential Homes One and Two described in Study One. Edge space locations were identified indoors in lounges, dining rooms and bedrooms, or outdoors in close proximity to the building, according to the essential criteria for the built environment, repeated here from section (3.2.2.1)

Figures 3.1 and 3.2 show the floor plans of the dining room, lounges and bedrooms where dialogues took place, annotated with the edge spaces criteria. Two of the three lounges benefited from a corner location in the building which afforded windows on two sides of the room. The edge was therefore anywhere in the room. The third lounge had windows along more than half of the wall so the edge was the half of the room closest the windows. The bedrooms, although undersized according to current care standards, have windows covering most of the wall and so the edge space was the whole room. Figure 3.3 and 3.4 show the outdoor areas of both homes. Home One had an outdoor garden area not directly adjacent the unit but accessible by travelling down in the lift, along a corridor, through the smoke room and out through a set of glass doors. The patio area at Home Two was adjacent the EMI corridor with easy ground floor access and a door that stood open most of the day.

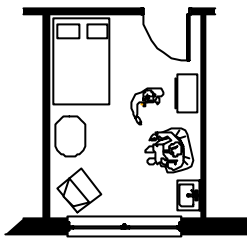
Figure 3.1 – **Indoor Edge Spaces: Dining Room & Bedrooms**
 Floor plan diagrams of qualifying edge spaces where dialogues took place
 (ellipses indicate positions of the participant and researcher)

Dining room



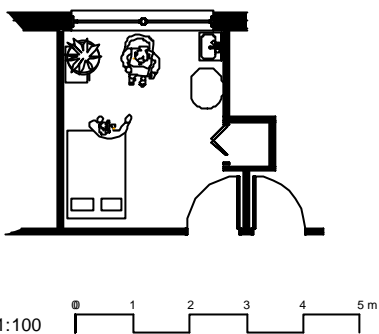
- Furniture for two to sit or stand
- Within 1.0 metre of each other, angled to enable eye contact
- Having a window in their 90 degree field of vision
- For windows on at least half of the wall, the edge is the half of the room closest the window.

Bedroom 1



- Furniture for two to sit or stand (squatted & sat on floor, no chair)
- Within 1.0 metre of each other, angled to enable eye contact
- Having a window in their 90 degree field of vision
- For windows on the whole wall, the edge is anywhere in the room.

Bedroom 2

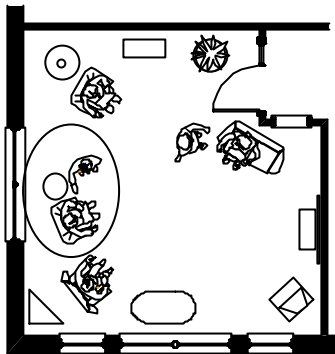


- Furniture for two to sit or stand (no chair, used bed, asked first)
- Within 1.0 metre of each other, angled to enable eye contact
- Having a window (or a mirrored image of one) in their 90 degree field of vision (bathroom mirror over the sink; corridor has windows into a bright lounge)
- For windows on the whole wall, the edge is anywhere in the room.

Figure 3.2 – Indoor Edge Spaces: Lounges

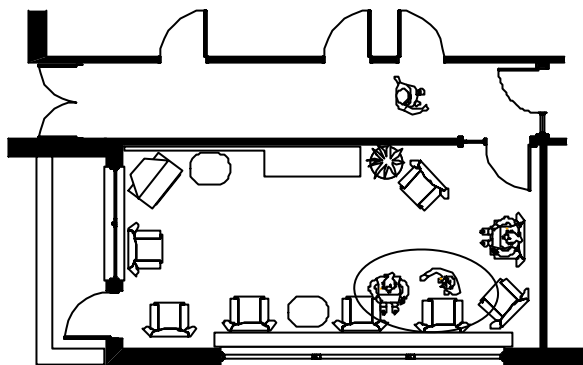
Floor plan diagrams of qualifying edge spaces where dialogues took place

Lounge 1



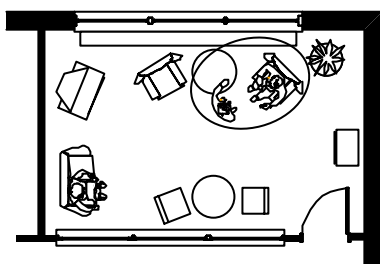
- Furniture for two to sit or stand
- Within 1.0 metre of each other, angled to enable eye contact
- Having a window in their 90 degree field of vision
- For windows on more than one wall, the edge is anywhere in the room (this lounge is at the south-west corner of the building).

Lounge 2



- Clear space to stand with support (chair arms and back are sturdy)
- Within 1.0 metre of each other, angled to enable eye contact
- Having a window in their 90 degree field of vision
- For windows on more than one wall, the edge is anywhere in the room (lounge is at the corner of the building).

Lounge 3

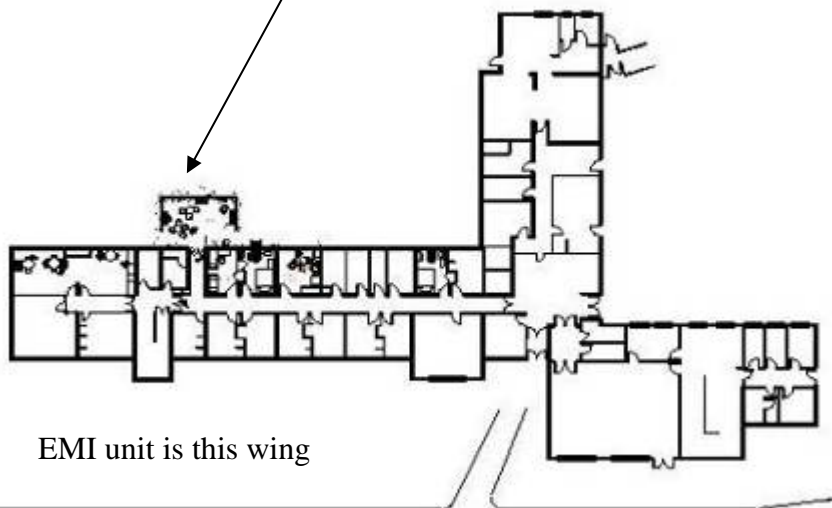
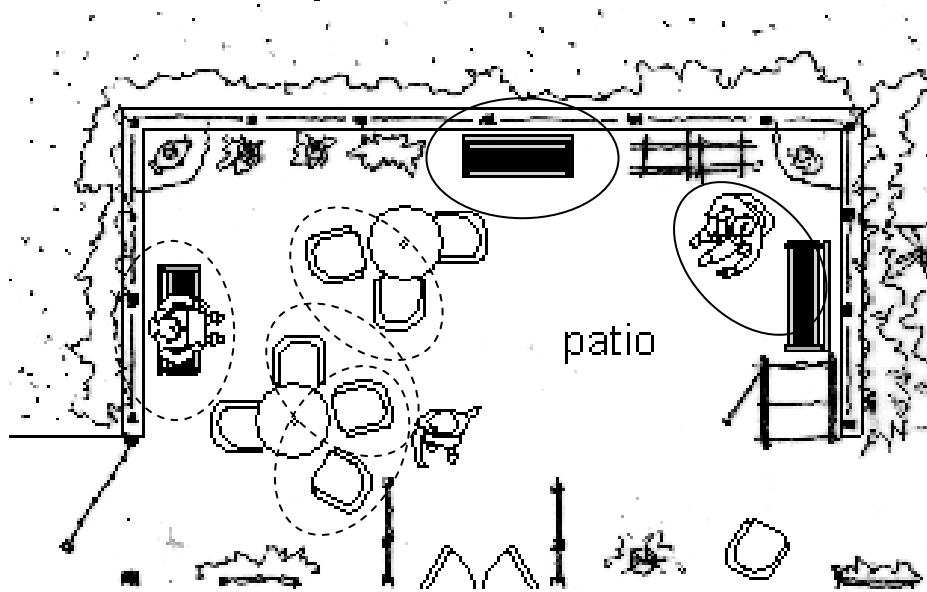


- Clear space to stand; also enough room for a zimmer frame
- Within 1.0 metre of each other, angled to enable eye contact
- Having a window in their 90 degree field of vision
- For windows on at least half of the wall, the edge is the half of the room closest the window.

1:100 5m

Figure 3.3 – **Outdoor Edge Spaces: Patio area Home Two**
Floor plan diagrams of qualifying edge spaces where dialogues took place.
Dashed ellipses show other potential positions for researcher and participant.

- A sunny outdoor space between 20-30 degrees
- with furniture for two people to sit
- within 0.5m of each other, angled to enable eye contact
- within 10m of the door and within view of the entrance



Arrow shows location of patio in relation to the home and the EMI corridor

Figure 3.3 (continued) – **Outdoor Edge Spaces: Patio area Home Two**
Photographic images of qualifying edge spaces where dialogues took place.

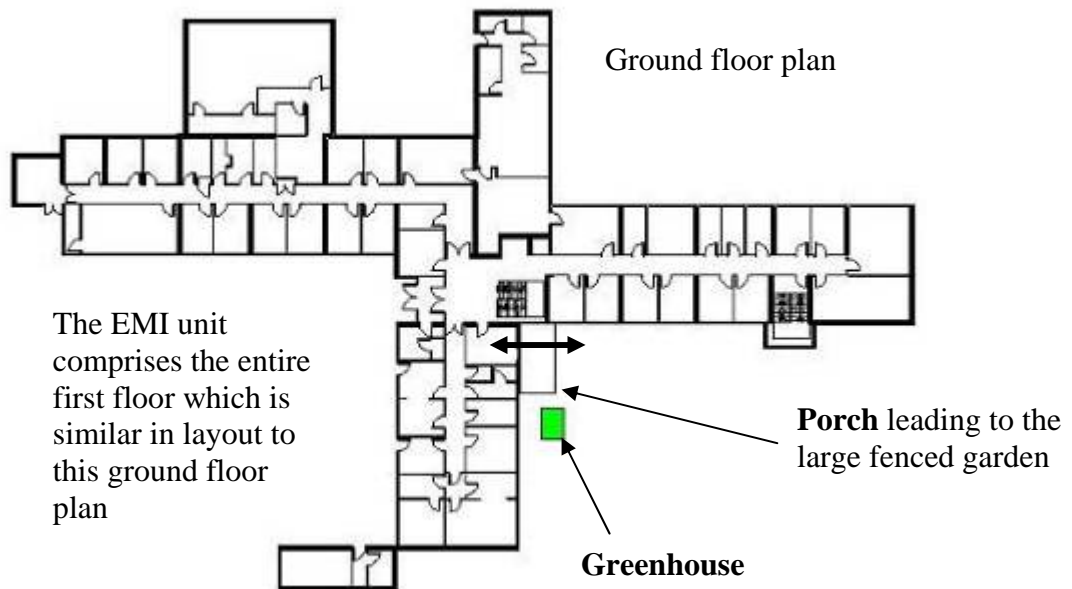
Solid ellipses show actual places where dialogues occurred. Dashed ellipses show alternate locations that also meet the essential criteria for edge spaces. Photographs do not necessarily correspond to the drawing shown above or to each other, but reflect the variations of seating arrangements that occurred throughout the course of a year.



During the drier, warmer months when the chairs and tables are wiped and set in place for use, this patio can have as many as nine edge spaces. Because of the walls, trellises and arbours there are a range of seating options in sunny or shady spots. Although most seating is not sturdy, its move-ability is a benefit. This area is visible from two indoor common areas. Outdoor areas frequented by staff persons on breaks, if such areas are located accessibly from the EMI unit, also benefit residents. Both outdoor edges in Study Three were regularly used by staff. The edge space used at Home One below, being inaccessible by residents independently from the EMI unit, effectively limited its use by residents with dementia.

Figure 3.4 – Outdoor Edge Space: Porch & garden area Home One
Floor plan diagram of qualifying edge space where the dialogue took place

- A sunny outdoor space between 20-30 degrees
- with furniture for two people to sit
- within 0.5m of each other, angled to enable eye contact
- within 10m of the door and within view of the entrance



Close up of the edge space where the dialogue took place



(The route from the upper floor EMI unit to the garden involves a trip down in the lift, or down the stairs through an alarmed door, around a corner, past the main front entrance of the home, into and across a small smoke room and out of a pair of stiff sliding glass doors by stepping over a threshold.)

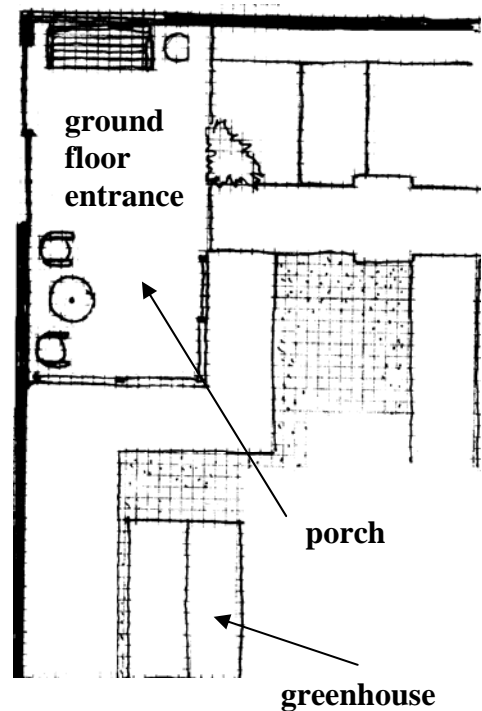
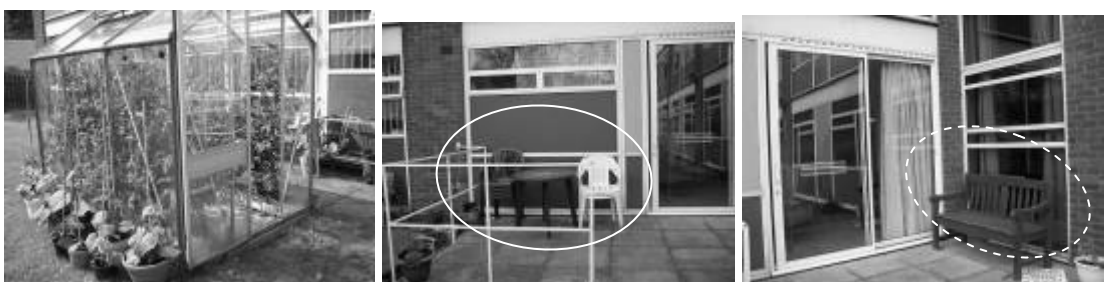


Figure 3.4 (continued) – **Outdoor Edge Space: Porch & garden area Home One**
Photographic images of qualifying edge space where the dialogue took place

Images below and the drawing above depict usual arrangement of chairs and table with the table placed between the two chairs. Prior to the experiment, the table was moved by the researcher, an indoor chair was brought outside and two chairs were placed side by side, bringing the spatial attributes in line with the essential criteria of an outdoor edge space. This outdoor area has ample garden but it is rarely used by residents with dementia, perhaps because it is remote from the upstairs EMI unit.



This outdoor area has many opportunities for edge spaces but suffers from lack of enough supportive seating (only the wooden bench is appropriately sturdy). If more people came down to use it would there be more developed edge spaces or vice versa?

3.2.7 ANALYSES AND RESULTS

Daily life is essentially diachronic, a *process* that is the object of study. Time, which is central to the study of processes, is present in Study Three because the transcripts of these dialogues are the records of interaction as they occurred, unlike Study One which gave insight into what was important to the participants from their retelling of it. Study Three gives insight into why nature is important from the participants' experience of it. The text of the dialogues is the record of their moment by moment experience in the space. Textual analysis (the analysis of human communication content) was therefore used to examine this data set. The aim of the analysis was to understand the person's experience by relating the textual content to the physical context. This section (3.2.7) describes the process of data collection and analysis for two data types: natural environment and built environment. Section 3.2.8 analyses the textual data results.

3.2.7.1 NATURAL ENVIRONMENT ANALYSIS

This natural environment analysis is different from the Nature domain found in SLANT in Study Two, which looked at what was available in the whole site according to the researcher at the time of carrying out the assessment. Study Three is concerned with the immediate experience of nature by the participants through enjoyable sensation within the time frame of the dialogue and within the spatial perimeters of a defined edge, be it indoors or out. The analysis of the natural environment is organised into two parts. Comparing the two homes is shown below. Comparing the nature mentioned in the dialogues to the nature afforded at the home is done in the text analysis section 3.2.8.2.

The natural environments of the indoor and outdoor edge spaces were compared. This was done by using the Helpful Criteria as a checklist to compare both sites (Table 3.1). The results were intended to highlight the differences between the edge spaces and between the two study sites.

Results of Table 3.1 showed there to be a small advantage of Home One over Home Two in the nature available in the view of the outdoor areas from inside the homes, and in the actual outdoor areas themselves. What was also evident from the results is that Home One, because it was on an upper floor, had more sky and the horizon in the view.

Table 3.1. **Natural environment afforded by indoor versus outdoor edges**

Indoor Edge - Helpful Criteria - Natural Environment
--

	HOME	1	2
View Content			
At least 1/4 of the total view from the window is comprised of the sky (Measure this by standing within one metre of the window and drawing the window panes. Then draw a line across the panes where the land and sky meet. Is the sky portion at least ¼ of the total?)		1	0
Landscaped areas including gardens, trees, lawns or planting beds		1	1
Water bodies (lakes, ponds, rivers) or features (fountains, fish ponds, waterfalls)		0	0
The horizon (enables seeing to a distance, sunrise or sunset)		1	0
Evergreen and deciduous trees, shrubs or groundcovers		1	1
A combination of hardscape, lawn and planting areas		1	1
Plants that flower such as annuals, bulbs, shrubs, vines or fruit trees		1	1
Wildlife habitat – plants for nesting, foraging, food, nectar or shelter		0	0
Garden elements such as soil, compost, mulch, gravel, pebbles or sand		0	0
An ecosystem such as a wetland, coastline, woodland or moorland		0	0
Rural elements such as fields, stone walls, sheep, cows or horses		1	0
Rural elements such as stone outcrops, valleys, hills or mountains		0	0
Sports ground, fishing pond, a bowling green or a park		0	0
		7	4

Outdoor Edge - Helpful Criteria - Natural environment			
	HOME	1	2
Outdoor area (or the view beyond the edge) includes:			
Perennials or annuals		1	1
Vegetables, herbs or fruit		1	0
Evergreen and deciduous trees, shrubs or groundcovers		1	1
A combination of hardscape, lawn and planting areas		1	1
Sensory plants such as herbs or fragrant plants		1	0
Plants that flower such as annuals, shrubs, vines or fruit trees		1	1
Wildlife habitat – plants for nesting, foraging, food, nectar or shelter		0	0
Garden elements such as soil, compost, mulch, gravel, pebbles or sand		1	1
An ecosystem such as a wetland, coastline, woodland or moorland		0	0
Rural elements such as fields, stone walls, sheep, cows or horses		0	0
Rural elements such as stone outcrops, valleys, hills or mountains		0	0
Sports ground, fishing pond, a bowling green or a park		0	0
		7	5

3.2.7.2 BUILT ENVIRONMENT ANALYSIS

For each dialogue there were essential criteria of the built environment which were met in defining an edge space. The criteria afforded the dialogue to occur by providing seating or standing positions within spatial constraints, affording eye contact and a view within a measurable field of vision. Because each dialogue location met the essential criteria, differences in the edge spaces can be seen in the helpful criteria which may or may not have been present. This analysis will first present a cumulative list of helpful built environment criteria for indoor and outdoor edge in both homes (Table 3.3). These include features relating to seating, windows, doors, acoustics and view content. Results show that while the homes scored very similarly from their indoor edges, the differences occurred in the outdoor edges, where Home Two met a greater number of

helpful criteria. Some of the Helpful Criteria found in the two homes are illustrated below in Table 3.3.

Of importance from a design perspective, the analysis will now give examples of spaces from a number of homes which did not meet the essential criteria for edge space. Examples of ‘failed edges’ will be illustrated with photographs in Section 3.2.8.3. Some simple solutions are also offered to improve some of the failed edges.

TABLE 3.3. Built Environment Analysis of Indoor and Outdoor Edge Spaces

Helpful Criteria for Outdoor Edge Spaces in Homes 1 & 2			
	HOME	1	2
Seating			
Choice – Seats facing in at least 3 directions are located in the edge		0	1
Seats in at least 2 different styles or materials exist		1	1
Seats are arranged for individuals, pairs of people or group seating		0	1
Some seats are permanently fixed and some are moveable		1	1
Comfort - Physically provided through textures/materials similar to a person’s own		1	1
Seat material does not conduct heat or cold		1	1
Seating is sheltered/partly enclosed w an arbour, trellis, awning or umbrella		0	1
Physical support for older people -			
Chair arms extend slightly beyond the length of the seat		0	0
Seat height at least 400-500 mm from the floor		0	0
Sturdy, solid construction offering support for a person...		1	0
Visibility			
Seating can be seen from rooms inside the home& from the adjacent corridor		0	1
Proximity – Seating is near to a small table or ledge...		0	1
Doors			
Those to the outdoor space have windows in them		1	1
Those to the outdoors are unlocked daily, propped open/have auto openers		0	1
Paths			
Accessibility standards are met in the area for gradients, surfaces and handrails		1	1
Paths exist with stopping, seating or leaning points every 10 metres		0	1
		7	13

TABLE 3.3 (continued)

Helpful Criteria for Indoor Edge Spaces in Homes 1 & 2			
	HOME	1	2
Seating			
Choice – Seats facing in at least 3 directions are located in the room		1	1
Seats in at least 2 different styles or materials exist...		1	0
Seats are arranged for individual or group seating ...		1	0
Comfort - Physically provided through textures & materials...		1	0
Physical support for older people -			
Chair back upright with lumbar support		1	1
Chair arms extend slightly beyond the length of the seat		1	0
Seat height at least 400-500 mm from the floor		1	1
Sturdy, solid construction offering support for a person...		1	1
Visibility – seating can be seen from areas outside the room...		1	1
Proximity – Seating is near to a small table or ledge...		1	1
Windows			
More than the number required by the building regulations...		1	1
Glazing bars not at eye level when sitting or standing		1	1
On more than one wall		1	1
With opening hardware that is easy to use....		0	1
In any common area any day at least one window can be found that is open		0	1
Complex with panes that open in more than one direction...		0	1
With windowsills or handrails 60-90 cm from the floor....		1	1
Windowsills low enough (<601mm) to see out from seating positions		1	1
In internal walls to allow people in the corridor to see in and preview the space		1	1
Doors			
Those into the room are not locked, are propped open or are left standing open...		1	1
Those into the room have windows in them ...		0	1
Acoustics			
To increase audibility of conversation there is a mixture of soft and hard surfaces		1	1
Loud, abrupt, meaningless sounds (buzzers & alarms) occur minimally...		1	0
Loud, steady, meaningless sounds (hoover/carpet cleaner) occur minimally....		1	0
Clangs, rattles or bangs (plates, cups, cutlery, trolleys) are not audible...		1	0
Meaningful sounds			
From inside with the windows closed, church bells are routinely heard		0	0
From inside with the windows closed, a passing train whistle is routinely heard		0	0
View Content			
Contains visible objects less than 10 metres from the window		1	1
Contains visible objects.... As far away as 100 metres from the window		1	1
Contains objects.... as far away as a mile....		1	0
Urban elements such as buildings, traffic, buses, bridges or roads		1	1
Transport locations such as a taxi stand, train station or bus stop		1	1
Rural elements such as tractors, farmhouses, barns, sheds, silos		0	0
Elements with potential to move in the wind....		1	0
Playgrounds, day centres or activity areas for children		0	0
(daily) Pedestrian activity such as walking a dog or children going to school		1	1
People parking and getting in and out of vehicles		1	1
People going in and out of houses or shops		0	1
(weekly) Personal transportation such as bicycles or skateboards		0	1
Domestic activity such as people in their gardens, talking over the fence		0	1
		29	27

FIGURE 3.5 – Examples of helpful Indoor Edge Space criteria

This room is on the south-eastern side of the building. Daylight patterns in the room give information to the residents about time of day. Since the passage of the sun can be tracked by a person from this room and the adjoining corridor throughout the day, the light assists their temporal and spatial orientation.

Tall windows allow more daylight which regulates circadian rhythms and benefits sleep patterns.

Edge space if seen from internal corridor reminds people that the edge exists and may encourage them to enter the room and go to it.

Doors that are always open to rooms with edge spaces may encourage more frequent use.

Standing room near the window has a chair back or windowsill for support.

Views out expand as the person approaches the window, drawing them into the view.

Comfortable seating available and can be positioned so viewing is possible.

Room is large enough that an edge space dialogue is not totally overheard if there is another person in the room.

Having a view from the room into the building allows the person to keep an eye on things happening inside the home.

Open windows allow sounds such as the chime of church bells and the whistle of passing trains to be heard. Such sounds can provide temporal orientation as well as can trigger memories of time and place.

Windowsills are the right height to lean on or set a cup down on.

Windows with height allow the seasonal change in azimuth (height of the sun in the sky) to be perceived, and hence the month of the year can be surmised.

Views from upper floors contain more sky and hence daylight.

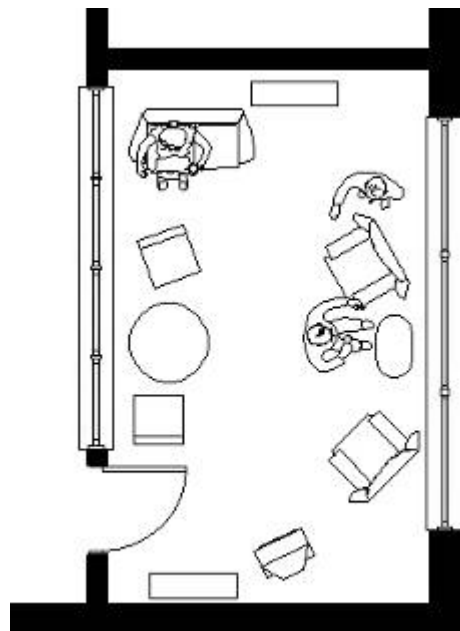


FIGURE 3.5 (cont'd.)
Examples of helpful Indoor Edge Space criteria

Public transport such as train or tram is visible and provides routine, scheduled appearances.

Public transport may also contain adverts which can be read aloud and commented on.

View contains a variety of heights from building features or from the topography.



Windows open to allow smells of seasonal plants and sounds of birds.

Wildlife habitat exists nearby and can be seen from the window. Passing cars, dogs and pedestrians can also be seen.



Foliage and tree structure are close enough to the window to afford views of birds and squirrels up close.

Upper floor gives the view some height which encourages active viewing and moving of the head and body.

Neighbourhood location near a school provides for daily and seasonal patterns of children walking past.



Flowering and fruiting trees and shrubs are close enough to admire.

**FIGURE 3.5 (cont'd.)
Examples of helpful Indoor Edge Space criteria**

Panes do not join at eye level so glazing bars don't interfere with the view.

Multiple panes ensure that at least one can be opened.

Windows are large enough to reveal a view from across the room.

Window opener mechanisms are easy to operate.

Windows are complex and can be opened daily for fresh air.



Complex windows with panes opening in more than one direction catch breezes, sounds and fragrance.

FIGURE 3.6
Examples of helpful Outdoor Edge Space criteria

The outside area is visible from the internal corridor.

Seating configurations allow for individuals, pairs of people or groups to sit comfortably.

Through the iron railing above the wall the view is to a larger garden area.

Space is enclosed partially with a wall topped with wrought iron fence with climbing and flowering vines.

The space is routinely used.

Surfaces are appropriate with adequate handrails for walking, stopping, standing and crossing thresholds.

Umbrellas are provided for sun protection and to create a feeling of enclosure and connection.

The adjacent room is the staff office so residents outside can feel secure that help is just a step away.



**FIGURE 3.6 (cont'd.)
Examples of helpful Outdoor Edge Space criteria**

All seating is just a few steps from the doorway back inside.

Seating is available that points in a number of directions offering choices for different times of day and climatic conditions.

The orientation of the space is on the southern side of the building.



Area is overlooked from upper floors of the home which encourages people to come down and use it.

Doorway to the outside area is always open during the day.

Seating is located so the person knows they can be seen by somebody inside if they need help.



**FIGURE 3.6 (cont'd.)
Examples of helpful Outdoor Edge Space criteria**

The wall provides the seating with an acoustical baffle.

It is a quiet location where very soft conversation is audible.

Seating is sheltered from the wind but one can feel a gentle breeze.



Sounds and movements such as traffic going past provide orientation.

There are moveable seats in a choice of materials, for instance metal, wood and plastic.

There are views out of the area towards landmarks such as tall buildings or steeples.



Seating is near to habitat where birds or wildlife can be seen and heard.

Seating is semi-enclosed or sheltered from direct sun.

FIGURE 3.6 (cont'd.)
Examples of helpful Outdoor Edge Space criteria



There is a small table or ledge to set down a drink or personal belongings on nearby.

Seating is near a trellis or other structure for climbing plants.



Many of the seats are moveable so staff and visitors can organise them easily to accommodate changing needs.

Seating is in the proximity of plantings or close enough for the person to touch and smell plants.

The diversity & richness of plant life affords much to comment on.

Seating spaces are connected by paving.

Access to the outdoor area is on the level or gently ramped.

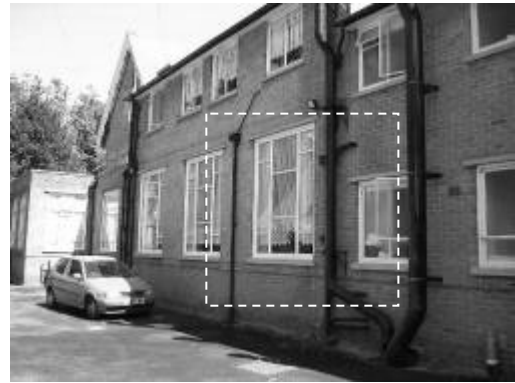
3.2.7.3 BUILT ENVIRONMENT ANALYSIS – FAILED EDGES

This section of the built environment analysis concerns both indoor and outdoor edge spaces. From a review of all the homes studied so far, some examples of spaces in the homes which would not meet the 'essential' criteria and therefore not qualify as an 'edge space' will be shown. This section of so-called 'failed' indoor and outdoor edges, illustrated with photographs, is a preliminary for the design implications.

Figure 3.7 **Failed indoor edges**



Lounge area with no windows except in the emergency door behind the bookcase to the left of the clock



Day lounge with full length curtains on the north side of the building receives no direct sunlight and has no view out.



Chair back against window, no other seat, no mirrored image, view is towards a windowless corridor. This situation is ubiquitous in small bedrooms.

Figure 3.7 (cont'd) **Failed indoor edges**



Tables keep chairs too far apart so when TV is on conversation is impossible. Windows on two walls was a helpful criterion found in this lounge.



2 corner chairs or 2 chairs with backs to window would not be within 90 degree fields of vision; 2 chairs in the side rows are beyond the edge space for a north-facing room



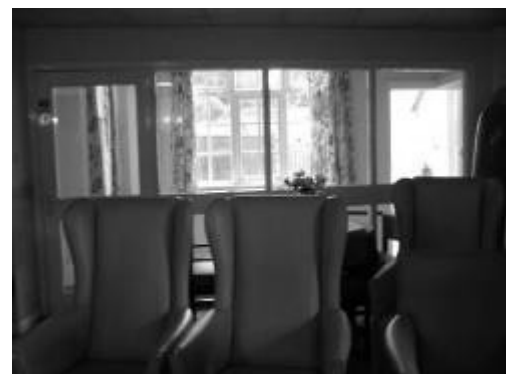
Chairs too far apart; chair with back to window doesn't have window in 90 degree field of vision [solution: switch placement of chair with table]



Chairs too far apart; back to window [solution: hang a mirror to the right of the TV]



Person with back to window doesn't have window in 90 degree field of vision [solution: rotate table 45 degrees]



There is no edge space in this room, it is in the corridor beyond this room; no angled vision for eye contact; view is to the wall and door [solution: turn two chairs around and angle together]

Fig. 3.7 (cont'd) **Failed indoor edges**



Chairs too far apart; no two chairs within 90 degree field of vision of windows; chairs are beyond the edge space which is the third of the room closest the window.



No two chairs within 90 degree field of vision of windows; chairs with angled view for eye contact are separated by a table and facing the door.



Chairs too far apart; chair with back to window doesn't have window in 90 degree field of vision; other chair is beyond the edge space (edge space of a north-facing window is only as deep as the un-curtained window is wide).
[solution: both chairs looking out, angled slightly with table to one side]



Chairs are not angled and the view is to the wall and the door; chairs are beyond the edge space which is the half of the room closest the windows, the half of the room behind the chairs or the space where the photographer is standing for the westerly-facing windows.

Figure 3.8 **Failed outdoor edges**



Accessible entrance to garden area but it is permanently locked



Not within 10 metres of a door or within view of any entrance



Emergency exit from a day lounge which has a landscape mural painted on the walls of the room; the room has no windows except the two in these doors, which are constantly curtained off.



Not in view of the entrance



Not warm or sunny (north side of bldg)



No furniture; sliding doors locked

This section has analysed the built environment according to edge and non-edge spaces, given examples of essential and helpful criteria in the two study homes and examples of failed edges from all 14 homes, with solutions offered that address some of the failings.

3.2.8 ANALYSIS OF TEXTUAL DATA

Dialogues with residents occurred in edge spaces meeting the essential criteria. They ranged in length from 3 to 19 minutes with an average length of 12 minutes. Data collection and analysis differentiated these spaces as ‘indoor’ and ‘outdoor’ edge space and they are factored separately in each section of the analysis below. There were three parts to the textual analysis:

1. To classify textual data according to the relationships expressed by the participants. A purpose-built unit analysis method was devised (3.2.8.1).
2. To determine the extent to which utterances were about nature that was present or was not present (3.2.8.2)
3. To determine the extent to which utterances either required or did not require the presence of nature (3.2.8.3)
4. To identify forms of self expression by the participants. Two main groups: expressed aspects of selfhood (3.2.8.4) and symbolic use of nature (3.2.8.5)

The role of the researcher in the dialogues varied depending on the level of interaction the participant desired or allowed. The dialogues were entered into with the intent of supporting the self expression of the participants. For some this required very little interaction except being physically attentive and offering occasional verbal prompts to let them know they were being heard, and to encourage them to continue. For others it required frequent turn-taking during the dialogue. The type of interaction the researcher gave was individual to the people with dementia as the amount or style of prompting and encouragement needed to relate to the needs of the individual. This method has proved effective with people with dementia in the research by Sabat (2001, 2002) and Surr (2006) on manifesting selfhood.

3.2.8.1 RELATIONSHIPS EXPRESSED – TYPES AND QUANTITY

The aim of this first part of the textual analysis was to gain some measure of the extent to which the person with dementia relates to people and things in their world. This is relevant given the increasing evidence affirming the therapeutic value of relationships within dementia care (Greenwood, 2001; Hellstrom, 2005; Hubbard et al., 2003). A method of unit analysis of text data was devised to accomplish this based on vocabulary

and in particular the use of pronouns. This method was able to precisely identify the relationships expressed by a person's spoken language through their use of pronouns and is therefore a person-centred method of data analysis. Support from the literature for this type of dementia-specific analysis tool will be provided. Within a person's spoken language, the extent of their mental and social network is revealed. Support for this concept from the geographical literature of space and place will first be discussed.

This first part of the text analysis demonstrates a way to quantify units of text according to identifiable relationships they express. The purpose is to show the extent of a person's mental and social net - the geographical bounds of their spoken concerns. Who and what are people talking about? This draws upon the work by geographers about 'sense of place' and 'home.' Places are 'aspects of the lived-world' which we distinguish 'because they involve a concentration of our intentions, our attitudes, purposes and experience' (Relph, 1976 p. 43). Places are also processes in the act of becoming - places are historically contingent process' (Pred, 1983, 1984). Buttimer examines this idea of 'home and horizons of reach' in terms of a 'lived reciprocity of rest and movement, territory and range, security and adventure,...' (Buttimer, 1980 p. 170). Like breathing in and out, home is where we move out from and return to – one's 'lifeworld' (Buttimer, 1976). The concept of lifeworld describes the location in which life's processes become centered. 'Centering is an essentially creative process authored by people themselves' (ibid.) in which the meaning of place both embodies and is embodied in everyday living.

As well as being closely linked to self identity, 'home' is of primary importance in place-making. The making and maintaining of a home is the human act of dwelling. '(T)o have a home is to dwell' and this is 'the essence of human existence and the basic character of Being' (Relph, 1976 p. 39). Of the connection between home and identity, Relph tells us that '(h)ome is not just the house you happen to live in, it is not something that can be anywhere, but an irreplaceable centre of existence. Home is the foundation of our identity as individuals and as members of a community' (ibid.). As our 'irreplaceable centre of existence,' home is an emotional net we throw over the space in which we dwell. And, just as strongly as our net includes, it excludes. Our sense of place is not only entwined with our village or home but also by an awareness of

other villages, and our potential rivalry with them (Tuan, 1977 p. 166). This geographical literature establishes the link between language, place and identity.

The current study seeks to connect language geographically and linguistically by analyzing the lexical performance of conversations. A technique for quantifying conversational performance using word-frequency measures was developed by Singh (1994) while researching aphasia. When Bucks and colleagues analysed spontaneous, conversational speech in people with dementia (Bucks, et al., 2000), they used an objective technique for analysing lexical performance which included among other measures a pronoun count. The technique required 'interviewing and transcribing spontaneous speech recorded in the context of a conversational setting' ... which were then analysed 'using a series of objective, clearly defined linguistic measures' (ibid. p. 74). This type of analysis examines the use of indexicals – verbal or non-verbal ways of indexing the self. 'Linguistically we display the 'self' through indexical expressions such as 'I' and 'you'. There is a singularity of meaning which can only be interpreted when one has the knowledge of the person who uses them and in the context of their use (Bond and Corner, 2001, p. 104).

Social construction theory (Coulter, 1979) has been used in describing and delineating the sense of self (Small, 1998; Sabat and Harré, 1992). Small and colleagues investigated the integrity of self (internal) and personae (external) in dementia using discourse analysis of several indexicals, including personal pronouns and proper nouns. Small gives the rationale for using analysis based on the constructionist account:

'...the existence of self can be confirmed in discourse through an individual's use of first person singular pronouns (I, me, myself, my, mine). If an individual with dementia can be shown to use first-person pronouns coherently in his or her discourse, he/she has displayed an intact self (1992: 447). Personae, on the other hand, are identified by co-constructed roles that individuals take on in various social contexts (*e.g.* as professor, student, parent, child, doctor, patient). Personae are mutually constructed in that each party 'positions' his/her persona in relation to the other's (Davies and Harré 1990). If person A's presentation or positioning of a certain persona is misinterpreted or not acknowledged by person B, it can be said that one of A's personae is being denied by person B (Small et al., p. 294).

The findings of Small and colleagues revealed that 'both self and personae are susceptible to decline in dementia. However, the results also provide evidence that even

in severe dementia, self and personae can be indexed in a variety of ways' (ibid p. 291). Their method included 6 different 'discourse markers of the residents' self and personae. These markers included:

- (1) first person pronouns (I, me, my, mine, myself, we, us, our, ours, ourselves),
- (2) second and third person pronouns (you, your, yours, yourself, yourselves; he, him, his, himself, she, her, hers, herself, they, them, their, theirs, themselves),
- (3) other lexical classes (nouns, verbs, adjectives and adverbs),
- (4) proper nouns (*e.g.* Mary),
- (5) conflict in interactions (see below), and
- (6) the positioning of personae' (ibid, p. 298).

This type of analysis gave this result:

'To the extent that self is indexed by usage of first person pronouns, the absence of first person pronouns in the discourse of more than half of the dementia residents suggests that the self-identities of many SCU residents may be compromised. Moreover, the virtual nonexistence of first person plural forms for the residents indicates that they did not seek or have opportunity to combine their selves with the selves of others' (ibid, p. 309).

Study Three used the first four of the markers listed above to analyse text data. But rather than merely indicating the occurrence of the words (which was done by Small and colleagues by loading the transcripts into Atlas-ti for Windows (Muhr 1996), a qualitative data coding and analysis programme), Study Three examined the text for the implied relationships that use of the lexical items indicated. For instance, when one of the participants said, '*we have a gardener*', it indicated not just use of first person plural, but also that the person saw their experience as inclusive of two other people – the person indicated by 'we' (the participant's mother) and the gardener.

Research using indexical studies of language by people with dementia help to dispel the theme of diminishing self which pervades both the popular and professional literature on Alzheimer's disease (Tappen, 1999), by showing there is a 'persistence of awareness of self into the middle and late stages of Alzheimer's disease' (ibid., p. 121). There are care implications as the authors suggest. 'Failure to recognize the continuing awareness of self and the human experience of the person in the middle and late stages can lead to task-oriented care and low expectations for therapeutic interventions' (ibid.). It is also argued 'that 'self' remains intact during the course of dementia despite the loss of cognitive and motor functions and, perhaps, the loss of the indexical creation of self' (Sabat and Harre, 1992).

Drawing support from the geographical literature on place and identity, as well as psychological studies using discourse analysis with people with dementia, the current study analysed the use of nouns, pronouns, subjects and objects within the text with the intention of mapping out linguistically the person's range of relationships. All the transcripts were initially analysed by taking sentences or phrases and based on the pronouns, nouns and objects in the grammar, determine the relationships expressed. The amount of text taken at a time was determined by the meanings the person expressed. This was usually a sentence, but sometimes as short as a phrase or as long as a run-on sentence. The smallest possible unit was identified that communicated a complete thought, and from that unit the relationships were analysed. This is termed *unit analysis*. Relationships can occur between the Self, Others and Things, or any combination thereof. Therefore, the transcripts of dialogues were analysed by relationships between the person and Self, Others and Things, and any combination thereof.

TABLE 3.4. Seven Categories of relationships identified from textual analysis of participant dialogues in Study Three with quotes to illustrate	
S Self	<i>Oh dear! Oh dear, oh dear (laughs long and hard). Can I sit down? I'd be standing up here, I don't really, I'm more...I'm too slow.</i>
SO Self & Other	<i>Wait a minute, mind you... I don't know... I bet most people like me will be better. He was a lovely man, Oh, we just get on don't we? God bless you, love. Somebody's put me off, a woman's put me off.... look at her with her mouth open.</i>
ST Self & Thing	<i>used to take it and dip it in vinegar, uh, the acorn and it'll harden in't it? lot harder then. ... the Christmas trees are up, already. I don't know. Cause it's lovely. No, not much of a smell, is there?</i>
SOT Self, Other & Thing	<i>And these trees are all acorns, we used to collect acorns. We have a gardener. It's a lot better in here. Warmer as well cause you're down, you're down on the level aren't you... Do they come out in here, patients? Do they, you know... ?</i>
T Thing	<i>Singing and that, in that top space down there. They're not chrysanthemums are they? No, no they're all tomatoes. There are two big ones, that big... well it's one big one in't it, one big 'un.</i>
TO Thing & Other	<i>Net ball for ladies, bowls, very popular that.. There were.....for about three for four lots of people to play either football or cricket or whatever, and the bowling just over the top there.</i>
O Other	<i>And you know good people, really good people. They don't let themselves get poorly. Well, nobody's telling each other up and nobody's annoying.</i>

The analysis process was iterative, starting out with Self, Other and Thing and then as the text demanded, expanding and contracting the classification categories until a total of seven relationship categories had been identified, and each sentence or phrase could be classified unequivocally into only one of them. Examples of text units from each category are given in Table 3.4. A summary of relationship counts for every dialogue can be found in Table 3.5 below. The 'Ranking' rows in the table indicate the dialogues with the most relationships (ranked 1) to the least (ranked 7). The table shows that 'SOT' and 'ST' were the highest ranked relationships expressed, in both indoor and outdoor edge space.

A	B	C	D	E	F	G	H	I	J	K	L
Initials and audio file number of Study Three Participants	Seven Relationship Types							Sum of phrases categorised	Relationships expressed	Not requiring nature present	Requiring nature present
Dialogues held in an indoor 'edge'	S	SO	ST	SOT	T	TO	O				
GN 330040 (1)	1	0	2	11	14	16	1	45	6	23	22
DD 330028	0	13	12	13	1	0	0	39	4	33	6
DS 330030	6	4	20	13	0	0	0	43	4	37	6
DV 300054 (1)	2	10	13	17	3	3	1	49	7	44	5
LK 300025 (1)	1	0	13	1	5	6	0	26	5	19	7
LK 330034 (2)	10	4	22	11	13	12	0	72	6	40	32
MB 300055	5	0	10	2	6	5	0	28	5	3	25
DW 330034	5	3	4	17	0	5	0	34	5	34	0
IR 330063	1	4	9	31	17	28	8	98	7	52	46
LB 000000	4	2	11	9	5	10	1	42	7	33	9
TOTALS	10	27	60	55	23	25	2	202	56	156	46
Ranking	6	3	1	2	5	4	7			1	2
Dialogues held in an outdoor 'edge'	S	SO	ST	SOT	T	TO	O				
IS 300024	0	0	12	5	14	4	1	36	5	29	36
GN 330057 (2)	2	0	8	11	8	6	2	37	6	7	30
BP 000023	11	4	62	25	11	11	2	126	7	110	16
DV 300056 (2)	10	2	68	29	30	7	0	146	6	15	131
TOTALS	23	6	150	70	63	28	5	345	24	161	184
Ranking	5	6	1	2	3	4	7			2	1

Figure 3.9 represents columns 'B' through 'H' from Table 3.5 expressed as percentages of column 'I' (the total number of phrases categorised). The residents are listed anonymously across the 'x' axis and columns 'B' through 'H' are listed on the 'y' axis.

Figure 3.9 Relationships expressed during dialogues by people with dementia in indoor edge space

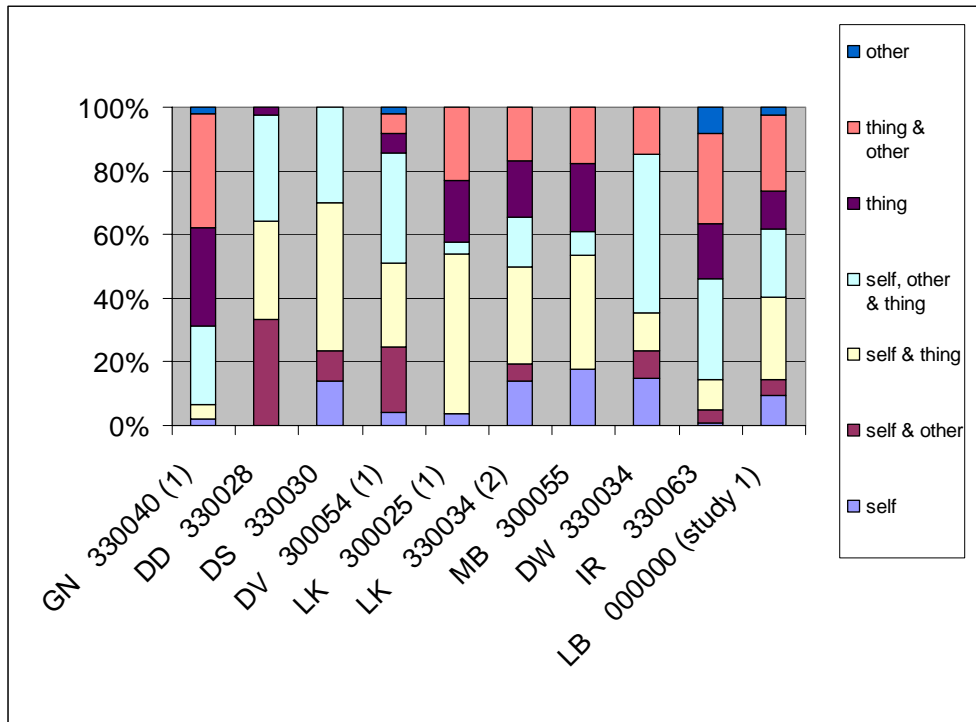
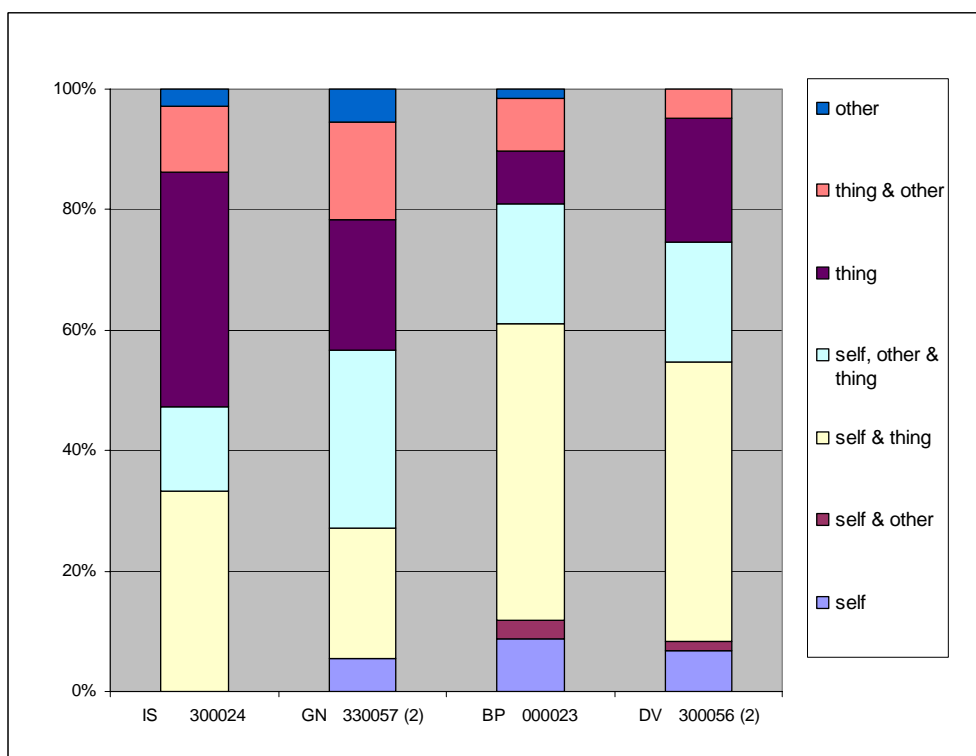


Figure 3.10 Relationships expressed during dialogues by people with dementia in outdoor edge space



Obviously this is a very small sample but some interesting associations arose from this analysis which further research could test. Taking the participants who expressed either 6 or 7 relationships, in what way did they or their dialogues stand out from the others?

Participants:

- Three have since passed away and a fourth has qualified for nursing care (possible link to level of dementia)
- Two gave accurate and detailed information about the local neighbourhood (possible link to knowledge of and connection to community)
- Three conducted their dialogue outside and one was standing and watching out the window (possible link to being immersed in sensory stimulation from the outdoors)

Dialogues:

- All but one were longer than the average 12 minutes (possible link to the longer a person talks).

Now that the tool has been developed, testing links such as these is possible, given a controlled study design, sample criteria and an interview schedule.

3.2.8.2 NATURE EXPRESSED – PRESENT OR NOT PRESENT

Next, the aspects of nature mentioned by the participants during the dialogues were compared to the affordances of the space to determine to what extent the nature that was present contribute to the conversation. Specifically, of the nature mentioned, did it actually exist, or were there natural elements mentioned that did not exist in the space? This was done by taking natural elements specified in the Helpful Criteria and listing them by categories of nature (plants, animals, earth, water, sun, sky, air, season and climate). Next, the transcripts were analysed for nature mentioned in the dialogues (+), and nature mentioned and also present in the edge space (+ =). Here are some quotes from the transcripts showing the coding. Results were shown for the indoor and outdoor edge of both homes (Table 3.2).

(79 yr old retired steel forge worker living in Home One)

I: 'What do you think? What do you see?'

P: '*Oh it's lovely in't it...nice, fresh...it's lovely this morning in't it?*'

I: 'UM hmm...'

P: '*Could be a bit warmer... 'What a colour, that yellow'* (points and notices the rose bed). '*You've got beautiful yellow though that in't it?*' (Yeah, it's beautiful.) '*Yellow rose of Texas!*'

(85 yr old woman living in Home One)

P: *'Oh, I know. Aye, lovely. Are them tomatoes growing? Tomatoes and what not in there? Aye...'*

I: *'They just set those. They just set those out, yeah, yesterday.'*

P: *'Me father use to have a greenhouse. So we got to know a bit (laughs). Nice out. Like the yellow rose. Beautiful in't it? Beautiful, that rose, isn't it?'*

(87 yr old woman living in Home Two)

I: *'When do you go out into the garden?'*

P: *'I go out many a time of day. Walk through garden and have a look at things.'*

(another example of imagined, continued participation)

I: *'What sort of things do you see?'*

P: *'Oh, little bits of flowers. Daffodils and all sorts. Not elaborate, not an elaborate garden.'*

TABLE 3.2. **Natural environment analysis**

Nature mentioned by participants in Indoor and Outdoor Edge Space ('+') compared to nature mentioned and also present ('+ =')

INDOOR Edge Space		HOME ONE			
+ Nature mentioned by participants during dialogues					
+ = Nature mentioned and also afforded by the edge space					
PLANTS		EARTH		SKY	
tree	+ =	hill	+	clouds	+
woods	+	country	+		
shrub/bushes	+	sand	+	AIR	
grass/lawn	+ =	wall	+ =	fresh air	+ =
ANIMALS		WATER		SEASON	
birds	+ =	ford	+	winter	+
dogs	+	canal	+		
cats	+			CLIMATE/weather	
animal	+	SUN		shower	+
				TOTAL (+)	18
				TOTAL (+ =)	5

INDOOR Edge Space		HOME TWO			
+ Nature mentioned by participants during dialogues					
+ = Nature mentioned and also afforded by the edge space					
PLANTS		EARTH		AIR	
flowers	+	garden	+	fresh air	+ =
daffodils	+				
		WATER		SEASON	
ANIMALS		SUN		CLIMATE/weather	
birds	+ =	sunshine	+		
cats	+			TOTAL (+)	8
animal	+	SKY		TOTAL (+ =)	2

OUTDOOR Edge Space		HOME ONE			
+ Nature mentioned by participants during dialogues					
+ = Nature mentioned and also afforded by the edge space					
PLANTS		ANIMALS		SKY	
tree	+ =	birds	+		
rose	+ =			AIR	
tomatoes	+ =	EARTH		fresh air	+ =
flowers	+ =	Garden	+ =		
plants in greenhouse	+ =			SEASON	
acorns	+	WATER			
mint	+ =			CLIMATE/weather	
daffodils	+ =	SUN			
buttercup	+ =				
poppy	+ =				
foxglove	+ =			TOTAL (+)	15
chrysanthemums	+ =			TOTAL (+ =)	13

OUTDOOR Edge Space		HOME TWO			
+ Nature mentioned by participants during dialogues					
+ = Nature mentioned and also afforded by the edge space					
PLANTS		ANIMALS		SUN	
tree	+ =	cats	+	sunshine	+ =
rose	+	Magpie	+		
hedges	+			SKY	
grass/lawn	+ =	EARTH			
tomatoes	+	Garden	+ =	AIR	
flowers	+ =				
dandelions	+	WATER		SEASON	
daisies	+				
fruit	+			CLIMATE/weather	
clematis	+				
vegetables	+				
apple	+			TOTAL (+)	17
pear	+			TOTAL (+ =)	5

Summary Results of Table 3.2	Indoor		Outdoor	
	Home 1	Home 2	Home 1	Home 2
Nature mentioned by participants	18	8	15	17
Nature mentioned and afforded by edge space	5	2	13	5

All dialogues occurred during the late spring or early summer on clear weather days. Similar weather conditions existed during each dialogue. All dialogues except two were conducted with the participant sitting down, so views out were restricted to the height of the windowsill and the height and width of the view being governed by the size of the window and the distance to it from the seating. The two dialogues conducted with the participant standing up were on the upper floor on Home One. The fact that participants chose to stand at a window in upper floor rooms recognises both the richness and attraction of the available view as well as the need (or desire) to stand to see it.

I: 'What do you see?'

P: '*Lovely trees and bushes...ah, it's beautiful...it really is beautiful, i'nt it...do you think it is?*'

I: 'Yeah I do, it's a nice view isn't it?'

P: '*Yeah it is...and it is a picture really, because, look at all these lovely beautiful trees, and look at these lot, people pass them and never look, don't they. They don't know what they're missing. They really don't. Lovely....I'd be standing up here, if I could stand...(laughs) and look.*'

Individual dialogues were analysed to determine if there was a difference between the natural elements commented on and those afforded by the edge space. This analysis found that in the indoor edge spaces of both homes there were more natural elements mentioned than were actually present (roughly four times as many mentioned as existed). In outdoor edge spaces Home Two showed a similar result to the indoor edges (more mentioned than was actually present). Home One outdoor edge data were different because they showed that of the natural elements mentioned almost all of them were actually present on site.

These results seem to suggest that nature stimulated conversation. The presence of nature may encourage or extend conversation, including discussion about nature. Stimuli may trigger memories in one participant, while the presence and availability of stimuli was perhaps of little significance to another. Many factors such as personality, life history and individual preference will affect a person's response to natural stimuli and potentially the dialogue content. The role the researcher plays will also be a factor in terms of level of encouragement, topics of discussion and knowledge about the participants. Given these variables which were obviously different for each dialogue and each participant, how did they use nature in their dialogues? Important to the aim of discovering a potential therapeutic role for architecture, was nature a tool for self-expression and where there any imaginative or creative uses of nature by the participants? This small study and this analysis are not able to determine *why* nature was used in a certain way, but it can help to identify *how* it was used. One dialogue in particular seemed to capture diverse uses of nature by the person and will be used to illustrate.

IR stood looking out of the window in a dining room on the upper floor of Home One, her hands on the windowsill and her face close to the glass. A blooming cherry tree filled the window. Lush green grass encircled the building which sat on a crest elevated above the road. The ground floor jutted out containing the kitchen and the function room. The flat roof was clearly visible from the first floor window where she stood. A tram stop could be seen further down the hill, and off in the distance the city was a blur on the skyline. Two other ladies were sitting nearby listening. Comments by the researcher were minimal throughout the interaction. The role of the researcher in this particular dialogue was that of 'silent partner' not to stimulate responses so much as be a person who was listening to her. Excerpts from the transcripts are given below.

IR was calling out to a bird which she believed comes to the lower roof top every day:

P: *'What did they call 'em? ...(indiscernible) they're like black and white, and they're like, oh they can sing and they can skip and owt!'*

She was responding to the nearby cherry tree with pleasure:

P: *'Oooh, it's a beauty...'*

But also with concern over something she believed was going to happen:

P: *'I think it's a shame to cut it down...' (looking at the blossoms on the tree)*
'Oh... aren't they lovely, duck...it's a shame to cut them off.'

She was also using the view to orientate herself spatially and to identify with the city:

P: *'What they call this place here? I forgot..... (indiscernible) Wouldn't think there were planes and boats round here would ya? Right at top of there, it's like canal. Somebody won't believe me.'*

Concerning the weather:

P: *'I don't go over there though, cause it's not fit sometimes. It'll pour down and you get wet....I wouldn't mind having a look round though.'*

Then the bird arrives:

P: *'Here look! Can you see it? It's my friend that. It's come for its finish grub haven't ya? Click, click, click. Come on! Click, click, click... Come on! Click, click, click..... And look, he knows you've...(indiscernible) down here (laughs). Should see him fly while.....(indiscernible) dear me, (shouts) Come on! Come on little 'en! Here be! Here be! Come on. ...fly now...oh, there's... waiting for you on the wall yonder. It's a shame though the way they get nowt in't it? I give 'em some. Pretty! Come on ducky!'*

(This concern that the animals weren't being fed was echoed in another dialogue.) She explained the movement of cats as being tied to the spatial environment:

P: *'Cats is just on main road like this, like that one, and cats come and have a sleep on there, on that grass verge, or at night time, it's late, but they don't care and they're still going, cat's do.'*

This 'grass verge' continued to hold her attention and trigger memories – some sad:

P: *'And there's some little pups, they're going to go', Mother says..., 'My dog go,'...(indiscernible) I says...and she says, 'Go to bed.' I said, 'No'...cause she knew. And it's eleven o'clock at night and these two nice Alsatians were running up and down this road, our road, and they were only playing,so anyway I says to 'em, bedroom window...and they've got a big blanket on...and I think, what's it done to it? 'Oohhh, don't ask me lass,' says, 'It's one of my favourites.' Ahhhhh..., I saw it laying there on the patch...'*

She was aware of a cycle of vandalism in the built environment:

P: *'Oh...don't tell me...school...again. Tie some windows up and all. Any time there's a break in school, there's always some windows smashed.'*

She was acutely aware of and interested in the reality of her surroundings:

P: *'What's that? Blowing in grass. End of, end of, what is it? It's blowing in grass at bottom now wi' a pink thing. Look, sun's on it. It's not a bird is it? Might be a toffee paper what's got a silver lining.'*

This example suggests that the person's dementia in some sense afforded her the freedom to blur the boundary between real and unreal, between sensed and remembered. Natural stimulation from a tree, a patch of grass and a bird both riveted her attention to the present - the minutia of a toffee paper moving in the breeze, and a bird that seems to come when she calls - while at the same time they acted like a thread, seamlessly connecting her present moment to moment experience with her memories. Furthermore, there were concrete aspects of the built environment that seemed congruous enough with memories of emotional experiences and the places in which they occurred, that the present space seemed in her dialogue to become that past place. The road for instance, '*Cats is just on main road like this, like that one,*' is similar to a road in her memories. But the grass patch she remembered could have been the one she actually looked out on now, given the clarity and emotion with which she was able to invoke the past – '*Ahhhhh..., I saw it laying there on the patch.*'

From these excerpts it was possible to see that IR was able to be very present, and to respond in the moment to actual stimuli. But at the same time her experience of these sensations triggered memories which included other natural elements. This resulted in the score for Home One being 18 verbalised natural elements, with only 5 of them being present in the edge space. IR also retrieved emotionally charged memories and moved between past and present realities, showing creative and imaginative use of nature. (In the textual analysis in section 3.2.8.2, Figure 3.11, the conversation requiring nature versus not requiring nature will be presented.)

The role of the researcher during the interaction with IR was exceptional when compared to the other 13 dialogues. From the text box below containing some of the transcript it is possible to see that the role of the researcher was more observational than conversational. This participant was usually in a monologue with herself when the researcher visited the home. How different her verbalisations were when she was alone is difficult to say and would require the researcher to have been an unethical fly on the wall. There were isolated moments when IR phrased a question directly ('*Have you been in one?*'), and the researcher responded. She also directed comments occasionally at other people in the room ('*Come on, wind yourself up!*'). Largely the researcher was an insignificant factor in IR being able to express herself, an attentive observer.

Transcript excerpt showing speech ratio of participant (P:) to researcher (I:)

I: I'm looking at that beautiful tree actually.

P: 'Oooh, it's beaut...I think it's a shame to cut it down and well they go for it and make two little don't they, they make their friends like that and they fly on to one another. One mine, I got, uh, oh what they call em now? I've forgot. What did they call em? ...they're like black and white, and they're like, oh they can sing and they can skip and owt! They go there.... they can sit and look at it when it's going down...*(indiscernible)* ...can sweep it...*(blackbird arrives on the lower roof)* Come one sweetheart! Come on! *(laughs)* come on, ...now he's gone...every plane go down....and they change it every so often. And that's what we want...It's a lady what looks after 'em. She's got like a cloak on...and it's blue like....round her head...we look at her every day, it's 'bout time for us to go...*(ind.)* Well they said nowt....that's nowt fresh, is it. Not you neither... I think a plane's coming somewhere...watching...go there... ha, ha, ha...look at picture palace, they're doing it in the... pavilion, I think it is, do they call it, pavilion? That's some...you know when... you never know when...we're going once. They not got it. *(reads sign on the side of tram going past)* Wedding day to live! Wouldn't be if it were dead were it! ...We're going too slow, somebody's going out...how it goes on...save that one and there's another one...going in that yard...they've got more buildings than anybody haven't they? ...*(tram comes again)* she's turned round...coming down now...that's what she's doing. Oh, she's a nice looking woman and all. Got a little dog at side of her...the dog go on plane...I said well that's alright, I'm not bothered. I'd like to see...like that. Cause it's not into shape...she's got a lovely uniform on. You don't have manywhen there's nowt going off at hospital...it's so off...at night time...this is it...things to look at...think that things are going like that. Look at...well any way I don't know. ...what they call this place here? I forgot. *(to the lady beside her)* Come on, wind yourself up! ...riding and doing and that. Wouldn't think there were planes and boats round here would ya? Right at top of there, it's like canal. Somebody won't believe me. No.... Nah....I were in hospital then. So anyway they let me go for a week. They were gonna... and somebody starts. ...she says I want to show you summat...I thought well it's not very nice...but anyway....she says well if we're going boating...I've got to have a mac... Oh, she says, have you...I says yeah. She give me a little en, not to take home, cause if boats you could see em coming down at daytime, cause I told my () that, oh....go have a look ...he said, no, I've got to work, I said well that's alright, I'll go by my sen *(laughs)* ...got to take me tablets, kill or cure... I've nobody now, they've all died, my sister...me Iris.....one nanny, she died while she were away, holiday, she'd only got to come out of hospital on holiday... There's only me...that's all there is. I don't go over there though, cause it's not fit sometimes it'll pour down and you get wet...I wouldn't mind having a look round though. My four did it once. And it's where you going? Speak to her, and if I told her once...*(laughs)*... oh, what have I said to you? ...what you doing here, you dirty mouthed thing? She says I don't swear at nice people...She says I don't care, I like it. Just like nosey parker then. So that were that for her! *(laughs)* Old man come with coffee trolley....and the woman in it, got two little pups, in bed with her...well it's nowt but young pups...so she waved us away, don't tell anybody and don't... snoreno relations to us. Anyway she got in. She got in with dogs. But it's a nice hospital inside...don't want to go it any more... *(bird arrives tape point 58:48)* Here look! Can you see it? It's my friend that. It's come for its finish grub haven't ya? Click, click, click! Come on! Click, click, click... Come on. Click, click, click.... and look, he knows you've...down here *(laughs)* . Should see him fly while....dear me, *(shouts)* Come on! Come on little 'en! Here be! Here be! Here be! ...fly now...oh there's airplane waiting for you on the wall yonder. It's a shame though the way they get nowt in't it? I give 'em some. Pretty! Come on ducky! Come on body else round here when they do. Ooohhh...Where does it finish then? It started, where does it finish? Looks nice. Blue bricks. Yellow. I call it *(ind.)* . Plenty of motor cars to pick round, look at them! Oh. What were that? A bang? Ooohh, look at him. He's having a good rock-a-bye baby! *(looking at the blossoms on the tree)* Oh... aren't they lovely duck...it's a shame to cut them off. *(ind.)* cats *(ind.)*....round here...cats is just on main road like this, like that one, and cats come and have a sleep on there, on that grass verge, or at night time, it's late, but they don't care and there still going, cat's do. And there's some little pups, they're going to go mother says...my dog go...I says...and she says go to bed...I said no...cause she knew ...and it's eleven o'clock at night and these two nice alsations were running up and down this road, our road, and they were only playing,so anyway I says to em, bedroom window...and they've got a big blanket on...and I think, what's it done to it? Oohhh, don't ask me lass, says it's one of my favourites...Ahhhhh...I saw it laying there on the patch, they've made a square patch like it be here, and put some sand in for cats to play if anybody you know being, not being killed wi' em, but anyway there's police cars come dashing up here, not so long ago...oh, and telling mother, not my mother, another mother, and said boy it'll not live, and unfortunately it didn't, shame in't it? They're knocking 'em like that, where going out there... going to work. I keep thinking bout the dog and they've broke it. Tree there. Oohh the dog. ...Oh...don't tell me...school...again...time some windows up and all. Any time there's a break in school, there's always some windows smashed. In that, in here. Oh look at them...'line' 'hot then' *(reading words on adverts on top of the tram)*.... Oh don't know haven't got one. Car. They'll be going school late at night...I don't go out so I don't miss nowt, do I? *(laughs)* I don't bother....go on holidays but...go home about half pa, half past eleven. We're not we're not far off but it's too far for me that. What's that? Blowing in grass. End of, end of, what is it? It's blowing in grass at bottom now wi' a pink thing. Look, sun's on it. It's not a bird is it? Might be a toffee paper what's got a silver lining. *(tram passes)* Oh, they're lovely and clean them. Have you been in one?

I: I have.

P: Oh I've not, no. But they say they're....there's plenty of room...but no one's coming for on our road...all wrapped up. Ooohhhh...*(continues)*

Another finding pertained to the enjoyment of natural stimuli by one participant who is legally blind. She suffers from severe arthritis in the knees and walks with great difficulty using a frame. Her dialogue took place standing up upon her return from the dining room. She usually stood and 'looked' for a moment onto the landscape of trees, grass and sky, before taking her usual seat in the corner with her back to the view.

P: *'And it is a picture really, because, look at all these lovely beautiful trees, and look at these lot (the other residents), people pass them and never look, don't they. They don't know what they're missing. They really don't. Lovely. I'd be standing up here, if I could stand...(chuckles) and look.'*

How much of the view she was seeing versus how much she was sensing in non-visual ways was unknown to the researcher, but she obviously enjoyed this daily experience of sensation. Providing contact with natural stimuli for visually impaired people may need to be more closely examined, as this dialogue demonstrated the importance of affording such a person a view, even though most of it she was unable to see clearly, if at all.

Findings of the natural environment analysis showed that there can be a difference between nature mentioned during dialogue and nature existing on site. The difference was attributed to whether or not the content of the dialogue was about the immediate experience of natural elements or about memories prompted by the environment. From the dialogue with IR it was unclear if and how the person's dementia allowed her a greater freedom to move between these different uses of nature. This is an area in need of further investigation. But regardless of the mechanism, the creative and imaginative use of nature expressed by IR has implications for the therapeutic use of edge space. Connection to nature and social interaction to varying degrees enabled self expression.

3.2.8.3 REQUIRING (OR NOT) THE PRESENCE OF NATURE

The third aim of the textual analysis was to quantify phrases and sentences as either statements made possible by experiencing natural stimuli or statements that did not require nature in order to occur. The goal of this analysis was to determine to what extent the presence of natural stimuli was a factor in the verbal content of the conversation. Each phrase in the dialogues was classified as either requiring natural stimuli or not requiring it. Each phrase was taken out of context to allow the most conservative measurement to be made. Only those clearly made in response to natural stimuli in the moment were counted as requiring nature. For this reason the count of statements prompted by an interaction with nature, if taken in context, would be much higher than the counts stated. The results appear in Table 3.5, columns K and L along with the total counts per dialogue. These results are depicted graphically below as percentages in Figure 3.11, showing both indoor and outdoor edge spaces.

Figure 3.11 Utterances requiring (or not) the presence of nature

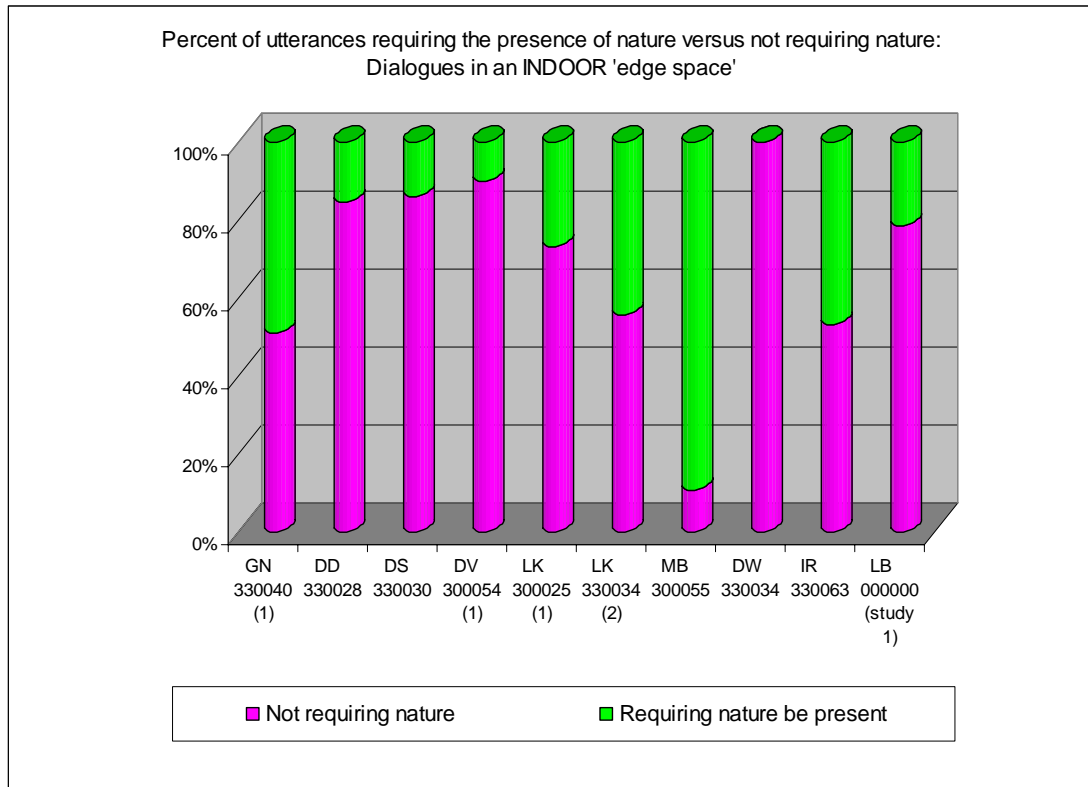
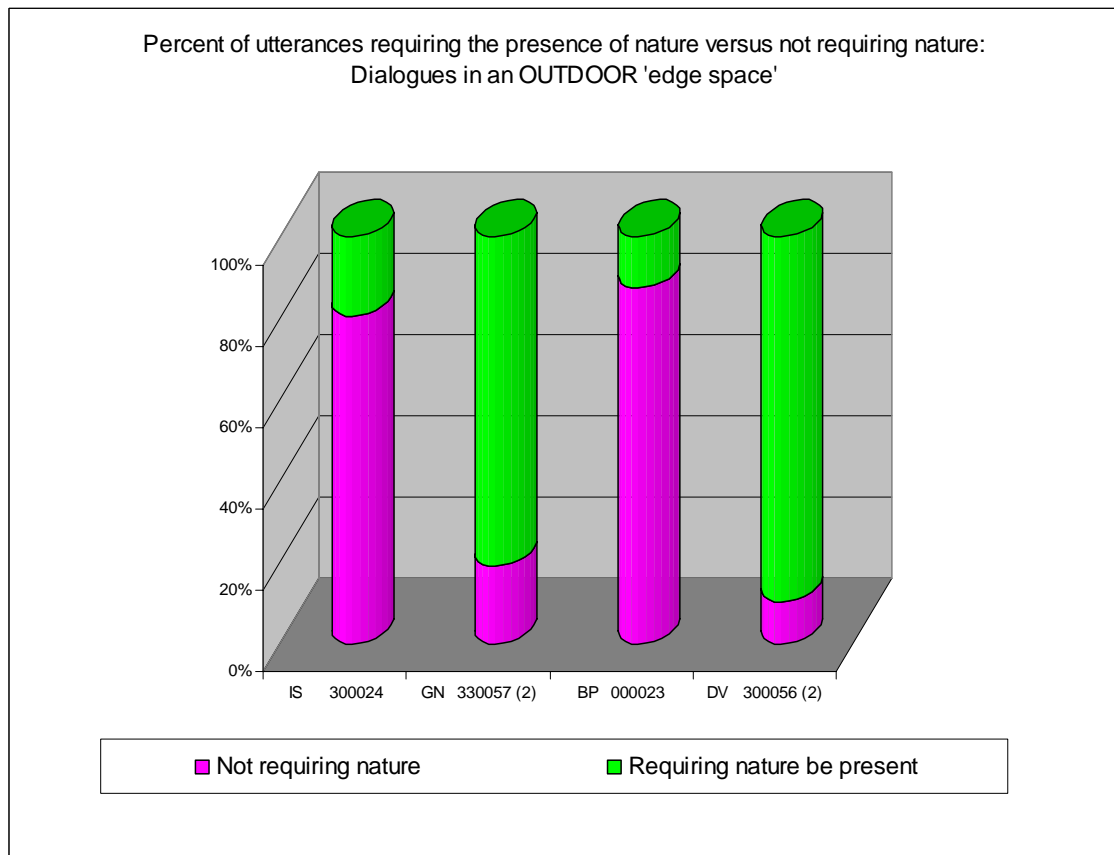


Figure 3.11 (continued) Utterances requiring (or not) the presence of nature



This analysis found that utterances requiring nature existed in all but one dialogue (DW). This one was with a person with the most severe dementia (who moved into nursing care within 6 months of the dialogue). Reasons for this lack of nature in her self expression cannot be determined with any certainty, but it appeared that the presence of the researcher was the primary stimulant to conversation and the participant's attention seemed focused on the very near scale environment, such as items on the table in front of her. Although she was sitting at a table beside a window, she did not look out but remained attentive to the people in the room and the objects close to hand.

The dialogue that contained the highest percent of phrases requiring nature (MB) was from a participant who was legally blind. This result can be attributed to her standing up and looking out during the dialogue, so her attention was already drawn to the outside.

Before analysing the dialogues it was assumed that verbal content was stimulated by either nature or by the human interaction from the researcher. But the analysis showed that some conversation required neither. Participant IR (see section 3.2.7.1 Natural Environment Analysis) seemed not to need the presence of the researcher in order to express herself. The content of her speech drew on memories and stimulation from the environment (including natural elements) which she combined with imagination and creativity in her monologue. Another finding contrary to the assumption was one dialogue (DW) that did not require nature.

Other than these two anomalies, the analysis found that all dialogues in edge space contained natural content to some degree. All but one of the utterances, not requiring nature, required human stimulation from the researcher.

Of the outdoor versus indoor edge spaces dialogues, generally more utterances required nature than the indoor dialogues. The dialogue with BP had the lowest percent of nature-required utterances. This was with a participant in a more advanced stage of dementia than most of the sample. The analysis in Figure 3.11 seems to indicate that nature was important because it afforded people a tool for self expression. For those interacting with the researcher, it also offered a tool for communication.

3.2.8.4 MANIFESTATIONS OF SELFHOOD – EXPRESSION AND IDENTITY

The fourth aim of the textual analysis is to find examples of self-expression or self-identity in quotes from the transcript data. Each transcript was examined to identify what aspect of the self the person was expressing in their sentences. For an example of the method, an excerpt from a typical dialogue appears below in TABLE 3.6 with expressions of self identified.

TABLE 3.6 Verbal manifestations of self provide evidence of personhood: an example of a textual analysis method	
I: 'Hi Naomi. Do you come outside much?'	
P: ' <i>Not an awful lot. I do it when I'm at home. Potter in the garden.</i> '	agency
I: 'In your garden...mmm...do you enjoy going outside?'	
P: ' <i>Ohh, very much so, when it's warmer. I don't like this 'cause it's not warm.</i> '	differentiation
I: 'Are you cold?'	
P: ' <i>I'm perished...but don't shout for anything...</i> '	Sense perception
I: (later) 'Tell me why you like to go outside.'	
P: ' <i>Well the sunshine is good for everybody, isn't it?'</i>	knowledge
I: 'Yeah.'	
P: ' <i>And, uh, well I just think it's a... a pleasant thing to do. You know you can sit in the garden, you can garden, or you can potter in the garden, or go and visit somebody and enjoy being out with people, you know, it's got a lot (going) for it, sunshine</i> '.	preference orientation
I: (later) 'Say it again.'	
P: ' <i>It's super!</i> '	excitement
I: 'What's super?'	
P: ' <i>Being like this in the sunshine.</i> '	awareness

During the time spent in dialogue, participants expressed themselves. A cumulative list appears in Table 3.7 showing the range of self expressions across all the dialogues.

TABLE 3.7 Summary table of verbal manifestations of self		
accomplishment	externalities	Participation
agency	excitement	peacefulness
ambition	harmony	personal responsibility
anticipation	humour	personification
appreciation	identification	perspective
association	imagination	playing on a team
awareness	independence	preference
candidness	inquisitiveness	prediction
caretaking	insight	preparedness
civic mindedness	interest	projection
concern for others	intimate relationships	reflection

contentment criticism design differentiation directedness discernment discrimination elaboration ethics	knowledge limitation mortality noseyness opinion organisation orientation ownership	recognition relatedness resourcefulness sadness sense perception surveillance vulnerability wonder
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3.2.8.5 SELF EXPRESSION - SYMBOLIC USES OF NATURE

A further aspect of self expression came out of the dialogues in Study Three when some participants used symbolic language, including metaphor, personification and self-reflection (Table 3.8). Nature was found to be a tool for communicating emotional and psychological information about their personal experience. The residents used nature in creativity, fantasy, ethical reasoning, and introspection. The incidence of which, seem to relate quite specifically to expressions about their own well-being and in particular their experience of dementia, as the following quotes from dialogues illustrate.

TABLE 3.8 Symbolic uses of nature including metaphor, fantasy, ethical reasoning, introspection, personification and self-reflection in dialogues with people with dementia in residential care
P: <i>'Oh I do, a tan, dark coloured bird.'</i>
I: <i>'What was he doing?'</i>
P: <i>'Just looking at us lot, thinking when are we going to throw him any grub. Did we give him something?'</i>
I: <i>'I don't think we did.'</i>
P: <i>'He'll think we're so many miserable buggars. Well he would, wouldn't he. Wouldn't you, if you were hungry and we didn't give you a bit of nowt to eat? You'd think to your sen [self] you're a miserable sod, wouldn't you?'</i>

I: <i>'What colour clematis would you have?'</i>
P: <i>'I don't know... I don't know.'</i>
I: <i>'You don't have a particular favourite kind of clematis?'</i>
P: <i>'No, I don't.'</i>
I: <i>'Why do you like the clematis?'</i>
P: <i>'Well it's a nice sort of largish flower. And it's life!'</i>

I: <i>'It's, um, vinca. Vinca vine.'</i>
P: <i>'Oh, lovely. Like they, stretch out like that... aren't they lovely, isn't it a beautiful colour! Lovely. No it's a shame to keep it...(she puts the blossom back onto the vine) I'll put it on the others, it can rest on there for a bit....'</i>

Section 3.2.9 has presented the results of the analysis of textual data. Prior to this, sections 3.2.8 analysed the natural and the built environment and presented results. Findings from all three analyses will be discussed in the next section, followed by implications for design and research, conclusions and a summary of Chapter Three.

3.3 FINDINGS AND DISCUSSION

This section will present and discuss the findings from Study Three which was designed to facilitate and investigate social interaction during sensory stimulation from natural stimuli within edge spaces of the building. Study Three (in addressing the research question: *Why is edge space beneficial for a person with dementia?*) could be termed ‘engagement research’ as it attempts to investigate benefit at the moment it is received, instead of upon reflection. For example, did the person use nature as a tool for interaction and if so in what ways? What role did the environment play in facilitating interaction, and how did such an experience enhance the participant’s well-being?

A protocol was developed to operationalise the aim of edge space (to enhance well-being through connection to nature) by providing standardised criteria for the physical environment and the social interaction. Data were gathered from the natural environment, the built environment and from discourse analysis of dialogue transcripts. Study Three was designed as ‘engagement research’ in which data were collected both on the interaction (with nature and another person) and on the subjective experience during the act of engagement.

Natural environment analysis

According to the analysis of the natural environment, edge space was beneficial to the people with dementia because it enabled two distinct patterns of communication to occur within the dialogues in both indoor and outdoor edges:

- Nature afforded sensory stimulation which was subsequently spoken about.
- Nature afforded sensory stimulation which prompted the retelling of past events.

In every outdoor edge dialogue the freshness of the air or the breeze was mentioned. This suggests that edge spaces affording tactile sensations of nature may be even more beneficial to a person with dementia as they involve stimulating the sense of touch, which the literature has shown to be therapeutic, for instance in aromatherapy massage or therapeutic touch (Snow et al, 2004; Woods et al., 2005). A further benefit appeared to result from using natural sensory stimuli to communicate in a way that could actually be facilitated by a person's dementia. Some participants showed a freedom of expression in their ability to move between their present moment to moment experience and their long-term memories. It was suggested from the analysis that the richness of sensory stimuli in the edge spaces afforded this creativity to occur in their dialogue. Furthermore, since mentioned aspects of nature in some dialogues outnumbered the actual aspects of nature counted in the edge space itself, one benefit of edge space was to stimulate further mention of topics of nature, beyond the stimuli being sensed. One further benefit of edge space was the enjoyment it apparently brought to a person with severe visual impairment who relied on non-visual stimuli that the edge provided her.

Built environment analysis

For the built environment analysis, a set of essential criteria had to be met within the spaces in which the dialogues were conducted. Given the results attained it is possible to suggest that the edge space as defined by these essential criteria did facilitate connection to nature for the participants who were then able through social interaction to use edge space in various ways to communicate and to express themselves. Exactly which of the criteria and to what degree contributed would require further studies to determine. As well as the essential criteria, numerous helpful criteria were identified which also served to facilitate both the connection to natural stimuli and the interaction with the researcher. The built environment analysis therefore consisted of identifying those aspects of the building and the view which contributed beyond the essential ones to the person's ability to use the space for interaction. Examples of helpful criteria were given from the study sites with photographs illustrating several of the points. To further demonstrate how edge spaces are specifically defined spaces and actually not that common in the care home environment, several examples of 'failed edges' – those which did not contain the helpful criteria (or in some cases even the essential criteria) necessary for benefits to be enjoyed, were also presented, some with remedies given.

Textual analysis

Text analysis revealed that seven different relationships were expressed within dialogues and they were possible to quantify. These relationships varied between persons and the variability seemed to be associated with conditions such as level of dementia, level of exposure to natural stimuli, personality & character and a person's knowledge about and a relationship with the local area. High levels of sensory stimulation were also found to be associated with maximum numbers of relationships expressed in dialogue. It was also demonstrated that all dialogues contained utterances made possible by human interaction as well as utterances made possible by the presence of natural stimuli. This finding supports the role of nature as a tool for social interaction. Textual analysis also found verbal manifestations of self, as well as the use of nature as symbolic language, including metaphor, personification and self-reflection.

According to the discourse analysis of the relationships, edge space afforded sensory stimulation, and higher levels of stimulation appeared to be associated with expressing higher numbers of relationships. Furthermore, since all dialogues in edge spaces contained utterances requiring the presence of natural stimuli, nature was therefore important to the participants because it afforded them topics for their dialogue (or monologue). And finally, because edge spaces afforded a connection to nature, they enhanced the ability of the person to communicate by:

- Using nature symbolically; and
- Using nature in creativity, fantasy, ethical reasoning, and introspection.

Through communication the person with dementia manifested their selfhood. Since the conversations were with a supportive person (the researcher) who reinforced their Self 3 personae, the social interaction had the potential to contribute to positive personhood.

As well as the textual analysis providing evidence of manifestations of self, there is support for the claim of therapeutic benefit within the profession of psychotherapy. For instance, a physical space affords a 'holding' for the interaction (a place for it to unfold) so that the person's experience can be validated by the therapist, non-judgementally and confidentially (Rogers, 1961, 1990). This is further supported by others who claim that treatment models based on psychodynamic theories operate on the basis of ego

functions and object relationships and can be maintained through a safe, accepting therapeutic relationship, where the individual feels understood and supported (Hausman, 1992; Kasl-Godley & Gatz, 2000). These findings lend support to previous research which compared activity interventions to a control group of time and attention. Politis and colleagues in a randomized controlled trial of a kit-based activity therapy for apathy in patients with dementia in long-term care found that there was a significant reduction in apathy scores in both treatment groups. They concluded that ‘despite the substantial improvement in apathy scores during the course of the study, there was no clear advantage to the reminiscence-based intervention over the time and attention, one-on-one control intervention’ (Politis et al., 2004).

It is important to reflect on the role of the researcher in creating and interpreting the dialogue data. First, the content of the dialogues was influenced by the relationship that existed between the researcher and the participants prior to the study. This resulted in the dialogue content being in part a function of the relationships between the participants. Likewise, the analysis done by the researcher was heavily influenced by the person doing it. Both the dialogue and the interpretation of it would have been different with another researcher and it is therefore important to keep this in mind when making claims on the outcome (Kohli, 1981). As Surr pointed out, how the participants view the researcher in the setting also has an effect on the data.

‘This varied from individual to individual and included being their grandchild, a student needing advice and help, or a friend who had come to visit. Therefore, the self of participants presented and described in this study may not be representative of the self that the study participants presented to others in their interactions’ (Surr, 2006, p. 1729).

One limitation of this study is that it had a small sample. There were 14 dialogues with a total of 10 different people. This limitation will be addressed in two ways. First, this work was carried out with a vulnerable population – older people with dementia, several of whom also have physical and sensory disabilities, enduring medical conditions. They experience good and bad days and good and bad moments (The more time spent with the participants the more likely the researcher knew what kind of a day they are having). They may at times suffer from memory loss, confusion, agitation, anxiety, depression, paranoia and aggression. Each of these vulnerabilities and conditions increases the difficulty for the researcher of entering into their world, gaining trust, managing risk,

gaining and insuring ongoing consent and navigating the emotional waters of anger, sadness and personality shifts that the disease causes. Hence, while the small sample size is acknowledged, being that the research is ethnographic in nature (Thompson, 2005), the small sample size is offset by the richness and insight gained into the life worlds of the participants, given the complexity and inherent difficulties within this field of research. The limitation therefore is that given the sample size, results are not generalisable to people with dementia in residential care or to people with dementia elsewhere.

Another limitation of the study was the uniformity of site selection. Study Three was limited to persons living in similar residential care homes. The buildings were owned and managed by the same company and were of a similar style, age and size. The culture of care in the homes as well as the age, size, style and condition of the buildings themselves were similar between the two sites. No conclusions can be therefore drawn about people in residential care in general or about the edge spaces in other types of facilities.

A goal of science is objectivity and it can be argued that the data were skewed due to the non-detached quality of the exchanges. As the goal of the study was to create interaction so it could be analysed, the role of the researcher as a catalyst for communication was an essential ingredient in the methodology, and this role has been explicated within the methodology section. People with dementia have been shown to have high levels of unmet needs for social interaction and ‘partaking in activities’ (Meaney, Croke, & Kirby, 2005). The non-detached quality of the exchange enabled the research question to be addressed and the goals to be met. However, further studies could involve a participant taking the researcher’s part, in a way similar to the triangle conversations.

3.4 IMPLICATIONS AND FURTHER RESEARCH

The findings of Study Three have implications for research, design and care practice which this section will highlight. The study aimed to gain a unique perspective on the subjective experience of people with dementia during connection to nature. Broadly speaking, this research is an advance from a decade ago when there was still some

hesitancy among researchers to speak directly to people with dementia. ‘The patient perspective has been largely ignored in studies of Alzheimer's disease. The person with dementia is often relegated to the status of object rather than legitimate contributor to the research process and much can be gained from a systematic study of patients' views’ (Cotrell & Schulz, 1993). By listening to and communicating with people with dementia we are hearing their voice, which gives us insight into the life world of the person. Study Three illustrated that speaking to people directly is not only possible but fruitful. Also, hearing their self-report is essential in order to balance and supplement proxy accounts, since client-informant perspectives often differ (Ready, Ott, & Grace, 2004). Marshall and Hutchinson have stated that:

‘While researchers have demonstrated interest in the use of activities with persons with AD, theoretical and methodological difficulties, unclear findings and gaps exist, including a lack of emphasis on gender, ethnic, racial or cultural differences. Sampling issues involving diagnosis and staging complicate the research on individuals with AD. Case studies, single subject experimental designs, and tightly controlled quasi-experimental and experimental designs are needed to advance knowledge in this important area’ (Marshall & Hutchinson, 2001)

The edge space dialogues, as a set of single subject experimental designs respond to this need. But they also present a promising new method that includes the physical environment and the moment-to-moment experience in data collection, enabling the person’s experience of nature and of social interaction to be directly correlated to aspects of the physical environment. Using what can now be termed ‘engagement research’ for analysing human-environment interactions, the research questions were fully explored. What engagement research offers is the concept of examining the person’s words, as well as the natural and built environment, during the time those words were spoken, and is therefore a contribution to dementia-specific human-environment research methods. Engagement research offered a reading of the data, a ‘thicker description’ (Geertz, 1973) at a deeper level than interview or observation alone could have provided, and perhaps is less prone to effects of memory and bias common to interviews.

As well as a methodological approach, Study Three provided an advance in two key areas of activity in current dementia research – discourse analysis and the role of the researcher. The discourse analysis method examined the textual data for the use of indexicals as well as indication of relationships, contributing to the work of researchers

such as Singh (1994), Bucks (2000) and Small (1998). The textual analysis of 14 dialogues provided a number of useful ways of analysing the data and posed some interesting links which might be followed up by further research. For instance, could there be a relationship between expressing higher numbers of relationships in dialogue and other factors such as the level of sensory stimulation the person is experiencing, or their knowledge of the local area or their level of dementia? If such links can be strengthened through empirical quantitative analysis of text data there are implications for software-based tools for early diagnosis, for monitoring of cognitive decline and for assessment of care practice.

The role of the researcher was expounded upon through the idea of developing a relationship with the person with dementia prior to the dialogue. This method extends case study work by Sabat (2001, 2002) in which long-term trusting relationships with the person with dementia can actually contribute to our understanding of the subjective experience, as opposed to compromising the objectivity sought in the data. This person-to-person stance was enabled by an informal approach demonstrated by Sabat and more recently by Surr (2006). Similar to their work, Study Three levelled the power relationships between researcher and participant. It also was similar in the sense of leaving the agenda open-ended so the person with dementia was free to initiate and lead the discourse into areas of interest, rather than respond and follow on predefined topics.

Of relevance to the architecture of care environments, this study demonstrated how research can be embedded in the environment it hopes to understand at the exact time it is being used by residents. Furthermore, it expanded the potential for the researcher's role and it provided a new tool for discourse analysis. For this reason, the evidence gained can be fairly robust. Over time, engagement research and its associated methods can contribute to theory-building and hopefully to improving the design of both the built and the social environments of dementia care.

3.4.1 IMPLICATIONS FOR THEORY - THE PROSENTIA HYPOTHESIS

Results of Study Three offered positive support for the general supposition of the thesis, that connection to nature had therapeutic potential for a person with dementia and that the architecture could play a role in facilitating this. Study Three presented a two-part

human-environment interaction, illustrated in Figure 3.12 as parts A and B. The model proposes nature as a tool for self expression if the interaction is facilitated by the social environment. Part A occurs between the person and nature through the mechanisms of sensory stimulation. Part B occurs between the person and another person through the mechanism of a relationship. The resulting human-environment interaction contributes to selfhood by allowing a person the tools to maintain a coherent sense of self. The connection to nature might be uncomfortable as explained earlier (cold, draughts, solar gain). But this still offers a person the chance to express their dislike or preference, which is an expression of self identity. Likewise, there is no guarantee that the interaction will result in the person feeling good about themselves, just that they will have the opportunity to express their sense of self. It depends on both people as to whether or not the human interaction is positive or whether it reinforces a stigmatised identity of deficit and illness. For a person with dementia, interactions which allow them to construct a positive self identity according to the social personae, 'Self 3' of Sabat (2001, 1002) and Small (1998), will contribute to their positive personhood (Kitwood, 1997).

Therefore, given that:

1) the external or social psychological factors play as important a role as the neuropathological and neuropsychological declines (Kitwood, 1990), and that:

2) 'the manner in which others interact with the dementia sufferer can have a significant impact on the individual's own sense of well-being' (Small, 1998, p. 292), and that:

3) self identity is socially constructed (Mead, 1934; Coulter, 1979; Sabat and Harré, 1992; Surr, 2006), and that:

4) the findings from Study Three showed that nature was useful as a tool for self expression, and that:

5) for those engaging in a dialogue with the researcher (as opposed to a monologue which the researcher was present for), nature offered a tool for

communication, a hypothesis will now be proposed which could be tested in further research.

The term 'prosentia' is coined to capture the potentially positive aspects of this triangular dynamic, to recognise the role of sensation in the interaction, and to provide an antonym for the term 'dementia.' The Prosentia Hypothesis can be stated thus:

IF a person interacts with nature and another person,

THEN they are able to maintain a sense of self.

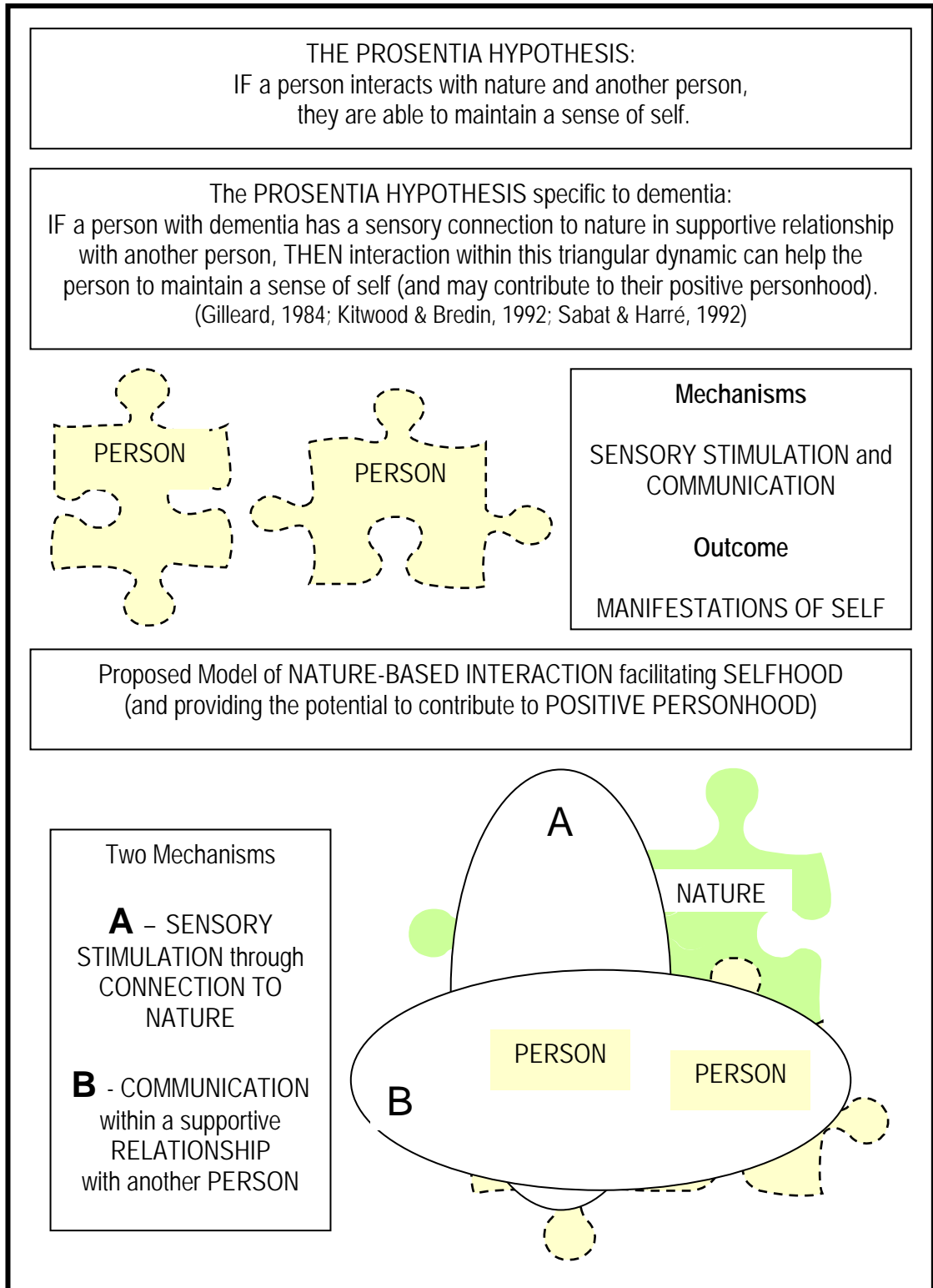
To make this dementia-specific:

IF a person with dementia has a sensory connection to nature,
in supportive relationship with another person,

THEN interaction within this triangular dynamic can help the person to maintain a sense of self (and may contribute to their positive personhood).

The Prosentia Hypothesis needs to be tested in further research. Studies specifically comparing the results of dialogues in edge spaces versus non-edge spaces would be informative, to see to what extent nature has any effect. Study Three showed nature was used during dialogue in a variety of creative ways, but is it essential or optional to manifestations of self?

Figure 3.12 **The Prosentia Hypothesis**



G. E. Chalfont, 2006

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3.4.2 IMPLICATIONS FOR CARE PRACTICE AND DESIGN

There are environmental design implications for residential dementia care based on these findings. But since a care environment has human and social as well as built and physical aspects, environmental design must address both if it is to achieve the therapeutic potential that Study Three demonstrated. Many of the problems of dementia are socio-environmental and not biomedical, according to the phenomenological perspective (Bond and Corner, 2001, p. 103). ‘Our approach in understanding the meaning of dementia, and in describing the experience and impact of dementia and of health and social care interventions, should take the perspectives of the person with dementia and their informal caregivers. In short, it should insure that the integrity of an individual’s personhood is maintained’ (ibid., p. 105).

The opportunity exists for care practice and the physical spaces within which care is provided to be considered in a wholistic manner if they are to support each other. In this sense, the design of care practice and the design of the architectures of care are two sides to the same coin. For instance, a sense of place was being articulated by the residents during their dialogues in edge space. ‘Sense of place can be conceived as a collection of symbolic meanings, attachment, and satisfaction with a spatial setting held by an individual or group... Place attachment is a bond between people and their environment based on cognition and affect...(which) rests on symbolic meanings’ (Stedman, 2002, p. 563). The concept of sense of place deals with meaningfulness and hence is tied to both a physical space and a psychological experience. This one example demonstrates how care practice, if designed to be provided through a synthesis with the physical place, has therapeutic potential by enabling the person to create an experience that is meaningful.

Furthermore, for care practice, edge spaces may provide a tool to begin the work of ‘tailoring care to individual needs’ through ‘emotion-oriented care approaches’ (Finnema et al., 2000). Also, although dialogue in edge space was not an ‘activity’ in the clinical occupational therapy sense of the word, a critique of research on the use of activities with people with dementia stated that:

‘Activities should be therapeutic, enhance quality of life, arrest mental decline, and generate and maintain self-esteem. Other purposes of activities for this

population are to create immediate pleasure, re-establish dignity, provide meaningful tasks, restore roles, and enable friendships. Activities may be more important to the psychological state of well-being of persons with dementia than the general physical and social environments in which they live' (Marshall & Hutchinson, 2001, p. 488).

Edge space dialogues had many of these same characteristics, and so might be considered from a care practice viewpoint to be an activity to which the physical space contributes. But to have such a space in a care environment may promote spontaneous use with these same benefits. This would need to be tested in further studies in which spaces exist with the essential and helpful criteria, and are observed to see if the space itself encourages the sorts of uses discovered in Study Three. If it is found to be the case, then the physical design can be therapeutic, as it contributes directly to the well-being of residents. But furthermore, if such spaces exist within a home and are incorporated into care practice (perhaps by specifying in the care plan that each resident should be offered a twenty minute one-to-one self-directed conversation every day, perhaps by volunteer 'befrienders' from outside the home) then there may be more direct benefits for a person with dementia by this kind of a pro-active approach to promoting well-being through communication.

Not only does care practice intersect with architectural design, but there is also a care practice implication that intersects with research. The method of data gathering conducted during the research was important for the residents as it provided them with quality time. Unfortunately, dialogues of much length are fairly uncommon in dementia care settings (Surr, 2006). The in-depth dialogues in Study Three enabled the persons to express themselves beyond the usual quick verbal exchange during care delivery, demonstrating that the research process itself, if it enhances well-being, can assist care practice.

A final implication for care and design is that research that generates first hand accounts of people with dementia facilitates knowledge transfer of the findings, for without research there is no story to tell and no audience (lay or academic) is reached as a result. Through dissemination of findings, 'knowledge of the lived experience of having dementia' (can be focused towards) 'pro-active care towards enhancing quality of life' (Steeman, 2006, p. 722).

3.4.3 IMPLICATIONS FOR DESIGN

Edge spaces simultaneously afforded the person with dementia sensory stimulation from nature as well as enhanced potential for social interaction. As the interactions contributed to well-being for the participants by allowing forms of self expression, the physical configuration of these edge space environments as defined by the essential and helpful criteria may be usefully applied as design criteria. As mentioned in the section above on research implications, these criteria may need to be tested under controlled situations. Study Three has shown that edge spaces provided sensory stimulation which played a role in the person's ability to communicate during dialogue with another person. If incorporated into care practice or into regular usage with family carers, edge space could potentially contribute towards a therapeutic architecture in residential care environments. There were many other aspects of the design of the physical environment highlighted in Studies One and Two which must also be considered in an overall design for the care setting. Therefore, the main implication for design coming out of Study Three is the concept of edge spaces, since they afforded sensory stimulation. It was shown that these spaces, when used to contain or 'hold' a supportive dialogue, enhanced the ability of the person with dementia to express themselves.

3.4.4 IMPLICATIONS FOR CAPACITY AND DECISION-MAKING

There are ethical implications for the findings of Study Three concerning meaning-making ability for people with dementia (Sabat, 2005). Determination of capacity is based on a diagnosis of dementia and neuropsychological tests of cognitive function...(but)...aspects of cognition such as meaning-making ability and selfhood cannot be assessed in a standard format. In dementia, there can be a differential impairment of recall memory while the personality, values and substantial long-term memory remain intact... Assessing the capacity of a person with dementia to engage in decision-making is presently in need of examination so as to take into account the person's meaning-making ability and selfhood. Incorrect negative positioning, based on the diagnosis and defects in recall memory, can obscure intact cognitive abilities that allow a person to make decisions about aspects of living...' (ibid., p. 1030). Discourse analysis can provide a tool for recognising and valuing the person's abilities and

experiences. While accounts of the subjective experience are helping us move on from the traditional focus on deficit and pathology (Sabat, 2001), methods are necessary.

3.5 CONCLUSION

Of the three studies in the thesis, each building upon the prior one, Study Three culminated the overall objective of the thesis in terms of understanding a ‘potential therapeutic role’ for architecture. The mixed method took into account the words and actions of people with dementia, the role of the natural and built environment in affording opportunities for communication, and the role of an informal dialogue in affording the participants an opportunity for creative self-expression. Furthermore, the study demonstrated a method of communicating with people with dementia which had both a methodological advantage of including their voices, and a social advantage of positive interaction which is beneficial to the people themselves (Potkins et al., 2003). The role of the built environment in both facilitating the social interaction, and in affording the sensory stimulation have been codified into the essential and helpful criteria for edge space, contributing towards a therapeutic architecture for dementia care. The key findings and the need for further research are presented below.

KEY FINDINGS

- Nature assisted people with dementia in their ability to maintain selfhood
- Natural stimuli during social interaction prompted self expression through memories and symbolic uses of nature, such as metaphor and personification.
- Edge spaces facilitated sensory stimulation and social interaction which are known to contribute to the well-being of people with dementia.

NEED FOR FURTHER RESEARCH

- To develop software for the discourse analysis tool
- To compare the use and effectiveness of edge versus non-edge spaces
- To investigate associations between the number of relationships expressed in the dialogues and conditions such as level of cognition, level of exposure to natural stimuli and knowledge of or involvement in the local area.

3.6 SUMMARY

This chapter presented the third piece of original research which developed iteratively from the first two studies. The stated aim was to investigate an interaction between people with dementia and nature, facilitated by the built and social environment, and contributing to well-being. Given the findings from Studies One and Two, the edge space was chosen as the architectural focus. The study was developed from several strands of theoretical support, including person-centred care, selfhood and social and therapeutic horticulture. Psychosocial approaches which employ the mechanism of psychological and emotional engagement through various forms of human-environment interaction added further theoretical support. Recent research involving meditation and guided imagery with people with dementia also supported the study design.

While it was anticipated that access to natural sensory stimuli within the edge space in the presence of another person would be beneficial, the research question addressed specifically: *Why is edge space beneficial for a person with dementia?* Study Three was carried out with 11 participants during 14 dialogues. A discourse analysis method was devised to give an in-depth quantitative analysis of the audio transcript data. It was found that the natural stimuli afforded by edge space were used for self expression by participants during dialogue. Manifesting selfhood through positive interactions is known to contribute to well-being (Kitwood, 1990; Sabat and Harré, 1992; Small, 1998). Furthermore, 'living with dementia involves the active creation and re-creation of meaning and identity, and the negotiation of empowerment, as part of the daily work of living with the condition' (Bond and Corner, 2001, p. 103). The use of edge space by people with dementia gave witness to such manifestations of meaning and self identity.

The discourse analysis method also raised some interesting questions for further research. In terms of the architecture, the essential and helpful criteria which appeared to support the interactions, while they need testing, do suggest a useful step towards a therapeutic design of residential care home environments. Criteria for indoor and outdoor edge space appear in section 4.3.2 as design guidance.

Study Three provided insight into one architectural-social way of ameliorating a lack of nature in the lives of residents. Because people were observed during actual enjoyment

of nature (the term 'engagement research' was proposed), evidence was gathered about the physical environment on a functional level. Several uses for connection to nature afforded by edge space have been documented.

The **KEY ADVANCES** of Study Three are thus:

- People with dementia used nature as a tool to communicate.
- A methodology for discourse analysis based on relationships was developed and demonstrated, which contributes to other research on selfhood in dementia
- Edge space criteria were defined which can be applied in the therapeutic design of residential dementia care buildings.

The person's ability to express pleasure and enjoyment at the edge between indoors and outdoors begins a re-conceptualisation of the building edge as permeable and inclusive, as a mediator rather than a barrier, advancing a new paradigm of integration and permeability over separation and seclusion. Chapter Four will provide a summary, discussion, implications and concluding comments on the thesis overall, reflecting on the research objective.

CHAPTER 4 – SUMMARY - discussion, implications and concluding comments

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CHAPTER 4 – SUMMARY - DISCUSSION, IMPLICATIONS AND CONCLUDING COMMENTS

4.0 INTRODUCTION

While interdisciplinary evidence supports the therapeutic benefits of nature for people suffering from dementia and design guidance recognises nature as an environmental requirement, in practice many factors actually limit routine ‘connection to nature’ for people with dementia in residential care environments. This was identified as the research problem this thesis would address. The research objective therefore was:

To understand the importance of nature in the lives of people with dementia, how a residential living environment facilitates a connection to nature for the residents, and the potential therapeutic role of architecture in providing such a connection.

The thesis began with the Introduction which presented the research objective, the aims and motivations, and then introduced the main issues and concepts. The research aims, derived from the objective, are three-fold:

- To determine if and why ‘nature’ is enjoyable to people with dementia
- To develop a tool to assess the potential of residential care environments to provide such a ‘connection to nature’
- To investigate an interaction between people with dementia and nature, facilitated by the built and social environment, and contributing to well-being.

These were accomplished by three pieces of original research leading from a user-needs analysis, to a systematic comparative investigation of existing care environments, leading finally to an architectural and social response to the issues raised and the challenges identified.

The aims of this chapter are as follows. First, the key findings and key advances will be presented followed by a general discussion including the strengths and limitations of the work. Next, the thesis research will be discussed in relation to previous research findings on the topics of nature, light and windows, connection to the outdoor environment, domestic routine and the fabric of the everyday, relationships,

communication, psychotherapy and creativity. Implications will then be given for the design of therapeutic environments, for research methodology and for care practice. The chapter ends with concluding comments.

4.1 SUMMARY AND DISCUSSION OF FINDINGS

This section will present the key findings, key advances and their strengths and limitations. The barriers to connection to nature are listed by the five domains and the benefits of edge space are listed separately following them.

KEY FINDINGS

Barriers to connection to nature for people with dementia in residential care

Person with dementia

- Thinking they still participate in nature-related activities outdoors when in fact they do not, so suggestions to go out are declined because they have 'already been'
- Physical disability prevents independent movement inside and outside the home

Formal care

- Organised activity programming that does not include nature-based activities
- Lack of domestic home-like activities involving nature such as gardening, pottering, feeding the birds and hanging out the washing
- Limited conversation on non-care tasks so nature topics are rarely discussed
- Severe physically or cognitively disabled residents are less likely to be taken on trips
- Staff are less likely to take residents downstairs and outside if they are on an upper floor

Social network

- Limited visits from family and friends lowers opportunities for being taken out
- Loss of contact with animals, wildlife and pets

Built environment

- Lack of edge spaces
- Lack of shading devices on windows that would allow people to enjoy the view without the heat or discomfort of full sun reaching the chairs
- Lack of views to nature, landscape, water features, parks, woodlands, etc.
- Lack of nearby habitat which limits available wildlife to watch from the home
- Placement of lounges and common areas with disregard for sun, breeze, view
- Lack of safe, enclosed, outdoor spaces with comfortable seating
- Lack of open doors leading from EMI corridors to outdoor areas
- Regulations for fire safety reduce the free flow of light and air through the building

Culture & aspiration

- Limited age-appropriate cultural events involving older people in the outdoors
- Cultural expectations that older people be invisible, inactive & socially withdrawn
- Cultural attitudes towards weather and climate and subsequent design responses

Benefits of edge spaces

- Edge spaces afforded sensory stimulation and supported communication
- People with dementia contributed to their own well-being through creative self-expression, such as using nature symbolically.

KEY ADVANCES

Research

- Definitions for ‘nature’ and ‘connection to nature’ were constructed based on enjoyment identified by people with dementia directly and their carers
- An ecological investigation of the person within the care setting highlighted the roles of both the social and the built environment in affording a connection to nature
- A ‘woolly’ concept such as ‘connection to nature’ has been quantified and SLANT, a tool for measuring it, has allowed cross-setting comparisons
- A discourse analysis method was developed giving insight into perceived relationships
- The Prosentia Hypothesis was proposed for future research to test the key mechanisms of beneficial human-environment interactions involving people and nature

Care practice

- Current evidence on the importance of nature in the lives of people with dementia has been broadened and extended
- People with dementia were documented using nature for self-expression
- The dialogue as a research method provided participants with quality time

Design

- Key barriers to connection to nature for residents in care homes were identified
- Use of indoor & outdoor edge spaces were shown to benefit people with dementia
- Essential and helpful edge space criteria were identified which can be applied in the therapeutic design of residential dementia care buildings

‘Nature’ is difficult to define and the definition in this thesis, while relevant to this study and these data, may be inadequate for other work as it was derived from the findings of Study One. There is the general problem of needing the concept to be understood in light of the participant data and at the same time to have enough methodological rigour to the definition to be able to test for the actual presence of this conceptualised entity. To develop a tool to measure such a concept will always be problematic and open to interpretation. However, the general idea of comparing living environments for their ability to provide residents with a ‘connection to nature’ had not been attempted previously and therefore was worthwhile, especially as Study One found such a connection to be important to the participants, according to themselves and their carers. Because of this thesis research, connection to nature need no longer be limited to concerns such as having a view or having access to outdoors for physical disability. Although the assessment tool developed herein cannot be argued as a definitive measurement, it is a reasonable attempt which can be extended by further work.

Conversations facilitated by edge space cannot be shown to occur more frequently or more easily than conversations held in non-edge spaces without a controlled study. In Study Three, the object was not to compare the effectiveness of an edge space in developing conversations but rather to show the ways in which it enabled a person with

dementia to use nature creatively - as a tool for self expression. The dialogue itself required a necessary role by the researcher to support and enable the participant to expressing their self identity. And finally, while the typology of the indoor edge space may prove useful as a design concept for dementia care environments to enliven the connection between indoors and outdoors, it should not be construed as a substitute for going outside. Edge space is a complement to connection to nature, not an alternative.

4.2 RELATION TO PREVIOUS RESEARCH FINDINGS

This section will present a number of areas in which the current work relates to previous findings by other researchers. The current work in general was found to support and extend previous work, especially on the importance of nature, light and windows, outdoor environment, domestic routine and the fabric of the everyday, most of which appeared in earlier chapters in the literature reviewed. Other work that is mentioned here but not found in previous chapters is included in response to the findings from Study Three and their relation to current work in areas such as relationship, psychotherapy, communication and creativity.

4.2.1 NATURE

The finding that nature was enjoyable and later proved to be therapeutically beneficial supports and extends current knowledge in Chapter One by Hartig, Ulrich, Kaplan, Barnes, Cooper-Marcus and others that found nature contact to be therapeutic, restorative and relaxing, to improve concentration and to renew mental energy. In particular, Barnes (1996) found a connection between emotional restoration and the environmental settings specifically chosen by individuals to assist their healing process. Use of edge spaces included this element of choice by the residents, and the use of the space did result in a positive experience. The concept of a restorative space (Francis & Cooper-Marcus, 1992; Gerlach-Spriggs et al., 1998) also seems strengthened by the current study because environment and emotional well-being are interconnected in the design concept of a restorative place.

4.2.2 CONNECTION TO THE OUTDOOR ENVIRONMENT

The finding that conversations in edge space enabled a connection to the outdoor environment supports research into the perceptions and experiences of older people with dementia that have been conducted recently on a neighbourhood level (Mitchell et al., 2003; Mitchell & Raman, 2000). This research project found that interaction by older people with dementia with the outdoor environment is limited, but such interaction clearly provided ‘some sense of independence and self-respect at a time when they are losing control over their own abilities and lives’ (Mitchell et al., 2004c). Furthermore, that study found that ‘older people with dementia generally enjoy going out but anxiety, disorientation or confusion can occur’ and they ‘tend to be less aware of physical and social dangers in the outdoor environment’ (ibid.). Because the edge space conversations were held outdoor as well as indoors, they provided a miniature test of sorts for the findings on neighbourhood. Obviously the care home environment is vastly different from an unpredictable neighbourhood setting, but some of the Study Three participants did experience hesitation in going outdoors and (typical of dementia) moments of confusion while they were there. But the psychological safety and support offered by aspects of the physical and social environment allowed them to overcome their hesitancy about going out and facilitate their experience of enjoyment while they were there. In this sense both studies addressed the importance of the outdoor world and the barriers for people with dementia in their access and enjoyment of it, albeit on different geographical scales. A larger, expanded study of edge spaces would likely result in the output of a check list of dementia-friendly edge spaces fashioned on the Neighbourhoods for Life ‘Checklist of characteristics of dementia-friendly neighbourhoods’ (ibid.).

4.2.3 DOMESTIC ROUTINE AND THE FABRIC OF THE EVERYDAY

Bhatti’s work on the role of the garden in home-making emphasises routine practices in everyday life and the home as always in the process of becoming (Bhatti, 2006). Whether actually in the garden or viewing it, conversations in edge could become a ‘domestic routine of everyday life’ and so contributes a source of pleasure and enjoyment (Bhatti, 2005).

The edge can also be seen as enabling ‘connections to the social and material fabric of everyday life’ as explained here:

‘...a life of quality is achieved when an older person can adopt strategies that allow enough, and sufficiently well-founded, connections to the social and material fabric of everyday life. Our data show how people constantly generate, reinforce and dissolve connections with environment. The range and intensity of these connections varies but there appears to be an essential comfort level which people strategically seek to maintain by creating a particular balance between self and society; reflexivity and reflectivity; inside and outside’

(Peace et al., 2003, p. 3)

Nature-based activities, if incorporated into the daily routine can increase the normalness of the environment, engage residents through sensory stimulation and reinforce long-term memories (Marshall & Hutchinson, 2001). Because the edge study demonstrated that a person with dementia can find nature meaningful, and use it to give creative expression to their personal experience, it extends the work of those who say that involvement with nature in the living environment allows personalisation and ownership, which can perhaps mediate against feelings of homelessness (Brawley, 1997; Schwarz & Brent, 1999). The current research also suggests a way of reinforcing resident autonomy and choice which ‘should be of paramount importance to ensure that residents have the facility to engage in only those activities that are meaningful to them’ (McKee, et al., 2002, p. 749).

4.2.4 **RELATIONSHIPS**

Dementia care practitioners and researchers have recognised the importance of relationships in dementia care (Greenwood et al., 2001) and more specifically, the relational approach to care provision (Nolan et al., 2001) and the dynamics of dementia (Keady, 1999). The finding that the professional carer or the social network can potentially increase well-being through interaction is supported by literature stating that ‘care staff should foster social activity and engagement in order to maximise resident well-being’ (McKee et al., 2002, p. 749). This is in line with a focus on the abilities and residual interests rather than the deficits of people with dementia (Crisp, 1999; Zgola, 1999). The spatial design of the ‘edge’ not only enabled the resident to experience natural stimuli, but it facilitated social interaction, which is essential to building relationships. It is within the context of relationship, by ‘maintaining a meaningful life

in the present' that a person with dementia and their spouse can create 'a nurturative relational context in which living with dementia unfolds' (Hellstrom et al., 2005). There is evidence that the unmet needs of a person with dementia in residential care include 'mental health needs, and social needs, such as company' and that these were associated with 'psychological problems, such as anxiety and depression' (Hancock et al., 2005). The enjoyment and connection displayed by the residents during the research acknowledges the importance of relationships to care-giving and is in contradiction to proponents of disengagement theory (Cummings & Henry, 1961) and instead indicates the desire and value older people place on social interaction and activity as a component of well-being.

4.2.5 COMMUNICATION

The ability of the residents to experience well-being through communication extends the work of others. For instance, communication is essential to well-being:

...in a Norwegian study of people with dementia, 'being demented and placed in a psycho-geriatric unit is a life in solitude for most of the time. The variation in time patients spent in solitude could partly be explained by their communication abilities. For patients with dementia, communion is essential for their well-being.'

(Norbergh et al., 2001, p.215)

Also, 'impairment of language skills affects the level of functioning of an individual, interferes with effective communication and can result in development of disruptive behaviour. Social skills and capacity for self care may be compromised' (Potkins et al., 2003, p. 1002). That an un-stimulating environment can have detrimental effects on communication has also been recognised (Bryan & Maxim, 1996).

Furthermore, the need for improved communication between resident and carer to reduce caregiver burden is well documented to which this quote helps to summarise:

'Family members caring for relatives with dementia face the challenge of maintaining relationships with persons who are physically present but not able to engage in appropriate social or verbal exchanges. This study provides empirical evidence that communication problems affect caregiver burden. The finding that this relationship is mediated by problem behaviours not only confirms past research on predictors of burden but

also supports the use of communication enhancement strategies as a means to target sources of caregiver burden' (Savundranayagam, 2005, p. S54).

Study Three demonstrated the use of nature and edge space to enhance meaningful communication between people with dementia and a supportive other. This research serves to open and strengthen avenues of communication between people with dementia and their family and professional carers as it is increasingly recognised that people with dementia desire more than just social contact, they want meaningful social interaction (Carstensen & Erickson 1986; Nussbaum 1991).

4.2.6 PSYCHOTHERAPY

Nature has been proven beneficial in dementia care as an element within a therapeutic activity (aromatherapy, lavender massage oil, gurgling water features and plants in Snoezelen) or as an environmental intervention (enhanced environments and sensory gardens). While the concept of the healing garden is not new, the concept of sensory gardens and gardening for dementia is also now more widely accepted (Chalfont, 2004). There is research around the importance of horticultural garden activities for people with dementia (Kwack, et al., 2005; Jarrott & Gigliotti, 2004) and the importance of enhanced or outdoor environments (Wilkes, et al., 2005). But the potential role of nature in psychotherapy for people with dementia has yet to be explored. Work so far has been to develop the idea of the enabling garden within a dementia care environment (Chalfont, 2005) since the natural world is known to provide beneficial effects on mood and stress for residents in long-term care (Rodiek, 2002). It is the next logical step to incorporate the work of psychotherapy practitioners who are already using nature as a therapeutic tool (Linden & Grut, 2002) with therapeutic garden designers. Tools and methods to explore and document the modes, mechanisms and efficacy of such an approach are slowly developing. This thesis research and findings are a small step to integrating these various disciplines within healing work. The emotional experiences of people with dementia resonate with those of psychotherapy clients suffering from trauma, loss, grief, amnesia, stroke, personality and identity disorder, chronic illness and terminal diseases such as cancer. It would be unthinkable to build a cancer treatment centre or a hospice without a garden as a focal point. And yet for dementia, which is a terminal disease, the healing role of nature has not yet been recognised and the need for psychotherapeutic care has not been acknowledged. Psychiatric care is administered,

albeit pharmacologically, principally when behaviours become a ‘problem’ to carers (Bruce et al., 2002). But the prevalence of untreated depression (Bohlmeijer et al., 2003) indicates that emotional and spiritual aspects of well-being are often ignored.

4.2.7 CREATIVITY

Study Three demonstrated that contact with nature promoted creative verbal expression. This was a surprising find but one that is increasingly supported by others. For instance, current research shows that parts of the brain in frontotemporal dementia can become more creative and artistic (Gordon, 2005; Mell, Howard, & Miller, 2003; Miller et al., 2000; Robertson, 2000). This seemed to be linked to ‘a progressive reduction in function of the left temporal lobe, and perhaps a lifting of inhibition by this lobe over other areas of the brain’ (Robertson, 2000). The results from the current work extend these ideas that contact with nature through creative acts may potentially expand the person’s consciousness, activate enjoyment and promote well-being.

4.3 IMPLICATIONS FOR DESIGN OF THERAPEUTIC ENVIRONMENTS

The concept of a therapeutic environment is broadly accepted to mean one which is designed in such a way as to provide benefits to health and well-being. The settings for dementia care are potentially therapeutic environments as they provide care for persons with disabling conditions. Kitwood defined good dementia care as ‘a series of high quality interactions taking place in a context of stability and secure relationship’ (Kitwood, 1997, p. 97). The practice of care for people with dementia operates with an awareness that the environment has beneficial potential. But there is still the interdisciplinary divide between professionals who provide care and those who provide the physical spaces within which care is delivered. People with dementia are not yet benefiting from a synthesis of architecture and care, due in part to a lack of interdisciplinary cross-fertilisation, perhaps resulting from professional specialisation as well as a lack of common language and ideology. Design and care professionals are only beginning to recognize the strengths such an integration can offer.

Place-based stimulation from natural elements has been shown to enhance creative expression (Bingley, 2003) in part because *the experience of a place* is highly resonant

with living energy and therefore is a more potent tool for self-expression. Study Three provided an example of a 'holding environment' which is central to the psychotherapeutic experience, a space in which there is empathy and trust (Grafanaki, 1996). The concept of the 'facilitating environment' was developed by Winnicott (1965/1990) and refers to the earliest experience of infancy which is essential to successful development and maturation (Bingley, 2003). A key characteristic of a 'facilitating environment' is its potential to transform (Bollas, 1987). (I am indebted to Bingley for her insights and literature concerning the 'facilitating environment.')

The implications of Study Three to psychotherapy include raising awareness and promoting a new paradigm of caring for the whole person, of which the psychological, emotional and spiritual are essential to wellness. A further implication is promoting the use of conversations in 'edge space' as a way to create this 'facilitating environment' in which the person with dementia can be assisted in their personal transformation.

Towards this aim, this thesis has advanced our understanding of the importance of nature within a dementia care environment generally, and of the value of edge space in particular. The latter is a contribution to evidence-based design of therapeutic environments, since the use of edge spaces was shown to afford sensory & cognitive stimulation, enable self expression through communication and enhance the ability of a person to explore spiritual issues. As a specific design output of the thesis, essential and helpful criteria of edge space were identified which give guidance as to the functional characteristics and requirements for edge spaces to be effective.

In considering the design implications of the thesis overall, it is now possible to propose design guidance for connection to nature appropriate for a residential dementia care setting, followed by some design guidance addressing edge space, which ranges from larger issues such as the relationship of a building storey to the outside ground level, to details such as complexity in window design.

4.3.1 DESIGN GUIDANCE FOR CONNECTION TO NATURE

LOCALE - Locate the home where:

Geographically there is a balance of nature and buildings

The view includes a scene such as a park, field or water body

Sporting or recreational area can be seen (game courts, fishing lake or bowling green)

A farm or field with livestock can be seen

Distant views of landmarks such as steeples or tall buildings can be seen

Locate home near:

Scenic areas, wildlife habitat, water bodies, parks, etc. for visiting
Inland body of water - lake or pond
Coast, beach, marsh, bay, fjord
River, stream or waterfall

BUILDINGS

Site buildings and outdoor areas using good landscape architecture practice
Site buildings with reference to views of adjacent 'borrowed' scenery
Site buildings relative to views of local activity to draw people to the windows

ROOMS AND LAYOUT OF SPACES

Locate most often used rooms such as lounges with attention to views
Locate lounges at the corners of the building to give two walls of windows, or
locate lounges with sight lines through to two opposite sides of the building
Increase flow of light & air through the building by use of open-plan areas
Design to encourage pedestrian movement through rooms and areas with views
Design to encourage previewing of spaces with a view so that they are used

1. Day lighting – Design so that there are:

Glazing panels or sections in roofs
Clerestory windows in walls
Glazed wall or roof sections in common areas
Glazed sections in circulation spaces such as stairwells & corridors
Windows along corridors
Higher than minimum ceilings
Glazed transoms or windows above doors

2. Furniture position – Arrange so that:

At least half of the seats are positioned with a view to a window
Sunshine reaches at least half of the seats at some point during the day
Daylight reaches all of the seats all day
At least one seat is near a window that opens
Clear standing room exists near a window
Clear standing room exists with chair, back or windowsill for support

3. Doors – Design so that:

Ground floor common rooms are no more than 10 m from a door to the outside
Upper floor common rooms are no more than 10 m from a balcony, roof garden, etc
Doors to the outside have windows in them for previewing the outdoor space

4. Windows – Design so that:

Common rooms have a large picture window or one with multiple panes
Common rooms have windows on more than one wall
Common rooms have an east, west or south-facing window
Windows open in at least two directions on the same wall
Panes do not join at eye level to intersect the seated view
Panes do not join at eye level to intersect the standing view
Windowsills are wide enough and sunny enough to be personalised
Windowsills are wide enough and sunny enough to grow plants on

VIEW – Ensure that in commonly used rooms such as lounges:

View contains the ground and the distance
View contains a variation in topography
View contains land or grounds inside and outside the property lines of the site
View changes through the seasons
View contains the sky

Windowsills or radiators afford leaning on or setting a cup down on

PLANTS INDOORS – Ensure that:

- Cut flowers are used in the home
- Live plants are grown in the home
- Indoor plants are watered, generally thriving and not neglected
- Silk and artificial flowers are used as well
- Some plants grown on site are used for eating or cooking
- Some plants grown on site are used for decorating, crafts or cut flowers

DOMESTIC ANIMALS – Ensure that:

- Domestic animals such as cats, birds or dogs, live in or visit the home regularly

OUTDOORS

- Create microclimates attractive to frail, older people in terms of sun and breeze
- Grow blooming trees near upper windows so birds can be seen and heard
- The area is enclosed and secure so residents can spend time there alone

1. Proximity and orientation – Design so that:

- Outdoor areas can be used for as long as possible during the day and year
- The location of the outdoor space is NOT on the north side of the building
- One room adjacent to the outside area is a staff or common room, assuring residents that staff can be in attendance if necessary
- The outdoor area can be seen from upper floors by people who are invited to use it

2. Circulation – Design so that:

- A doorway leads directly from the DCU or EMI unit to an outside area
- Access from indoors is on the level or gently ramped
- Walking surfaces are even and non-skid
- Thresholds between indoors and outdoors are minimal or completely flat
- Handrails are adequate for a frail person to reach an outdoor seat from the indoor area
- Path(s) exist in the outdoor area
- Path(s) actually go somewhere
- Paths and pedestrian routes to and within the area offer a choice of level access or steps
- Surface conditions can be seen and pre-viewed by residents from indoors
- Stimuli along the path are spaced to maintain the interest of a slow-moving person

3. Seating and tables – Make sure that:

- If there is a path, seating is provided every 10 metres so a person can stop and rest
- Seating is provided outdoors in a shady place during the summer
- Seating is provided adjacent to plantings
- Seating is provided outdoors in locations that are clearly visible from inside
- There is a choice of sunny or shady spots to sit
- Moveable outdoor chairs are provided
- Seating is just a few steps from the doorway back inside
- There is a choice of seating materials (i.e. metal, wood, plastic...)
- Some seating is sturdy and can be used for a person to lean on and steady themselves
- Some seating is close enough to plants for the person to touch and sniff
- Seating is provided facing both towards and away from the doorway to the building
- Some seating is in a semi-enclosed space
- Seating is sheltered from the wind
- Seating configurations allow for individuals to sit comfortably
- Seating configurations allow for pairs of people to sit comfortably
- Seating configurations allow for a group to sit comfortably
- Seating is near a trellis or other structure for climbing plants
- Seating is near to habitat where birds or squirrels might be seen

Outdoor tables are provided
Awnings or umbrellas are provided for shade protection
Small tables or ledges are provided to set down a drink or personal belongings on

4. Structures, Amenities and Provisions

Design outdoor areas with structures and amenities for shelter and comfort
If a wall or fence encloses outdoor space grow creepers, moss or flowering vines over it
If there is an enclosure fence or wall, there is a view through it to another area
Use a wall or fence to provide a protected and warm place to sit
Have a gazebo (platform with roof) or arbor (overhead structure) with seating
Have a greenhouse either attached to main building or free standing
Have a shed (protected space for DIY projects out of doors; space for sitting and tinkering, passing the time alone or in conversation)
Have a summerhouse (small structure set away from the building, used in the warmer months with seating and windows)
Have a clothes line (Linens and towels can smell of the fresh outdoors; activity connects a person to weather patterns, memories, domestic wellbeing)
Have a food area with BBQ equipment and an eating space with table and seating
Have a sporting area (game courts, shuffle board, bowling green, crochet, etc.)
Have a water feature such as a pond, waterfall, fountain or birdbath
Have garden art such as sculpture or signage that residents helped create
Have hanging baskets, tubs and plants pots planted up
Garden Materials (compost, soil, plants) are available to residents
Garden tools are available to residents

5. Plant materials – Provide diversity and plants for sensory stimulation including:

Seasonal bedding plants, annuals or vegetables
Large, mature shade trees
Large, mature evergreen or conifer trees
Large, mature shrubs
Flowering shrubs
Evergreen shrubs
Groundcover or vines
Perennials
Tactile plants
Fragrant plants

6. Plant materials & structures - Habitat (make available on-site)

Wild, overgrown shrubs, brush piles & wood piles
Berries, soft fruits or nut bushes (raspberries, cherries, etc)
Nesting places for birds in ivy growing on trees or walls
Nesting box, feeding station, bat box or butterfly box

TECHNOLOGY – These potential uses enhance connection to nature:

1. Freedom of movement between indoors and out

Monitoring device worn by the resident allows unrestricted outdoor access
Sensors on exterior doors alert care staff that a door is open, allowing resident safe and unrestricted outdoor access and freedom to come and go.

Automatic door opener allows easier access for frail or disabled residents

2. Going off site

Global positioning system (GPS) technology (for instance on a mobile phone) allows unrestricted access to the outdoors or neighbourhood

3. Fresh air access

- Automatic window or curtain controllers allow connection to outdoors for frail or disabled residents
- Passive sensors on windows alert carers through their computer monitor that a window is open, eliminating the need to restrict window openings
- 4. Safety & security of outdoor areas
 - Passive alarm at property line allows the resident freedom of movement around the grounds and protects from intruders
 - CCTV in outdoor areas allows residents freedom to be outside and provides security information to staff
 - Night-lighting enhances safety of evening trips to the outdoor areas
- 5. Enticement
 - Night-lighting allows views of the garden from indoors at night
 - Pumps for water circulation, fountains and waterfalls enhance outdoor areas by the addition of water features
 - Use of assistive devices for gardening and access to garden areas
 - Heights of hanging planters or baskets are mechanically adjustable
 - Special hand tools enable frail or physically disabled residents to garden
 - Special equipment for sitting or bending to enable access to the garden
 - Equipment available for sensory disability, for instance Braille signage outdoors
 - Motorised wheelchair with grass-friendly tires for lawn travel
- 6. Communication & Entertainment
 - Web-cam or internet based system allows residents to 'visit' areas outside or in the community from a computer screen in the home
- 7. Sensory stimulation
 - Multi-sensory environment such as a Snoezelen Room includes plants/water

Edge Spaces

Architectural features such as porches, balconies, entrances, mud rooms, window seats and conservatories are habitable spaces intentionally placed at the boundary between indoors and outdoors. For the sake of clarity, these shall be termed 'edge features' and simply from their juxtaposition at the building edge they afford connection to nature. The presence of edge features and/or edge spaces within a facility is a benefit as they hold the potential for sensory stimulation from nature to a person in the space.

Edge space and edge features

- Design edge spaces in rooms
- Locate stimuli near edges and edges near to stimuli
- Design entrances to include seating areas
- Design a porch, mudroom or entrance porch
- Design a balcony or roof garden
- Design a covered walkway with seating

4.3.2 DESIGN GUIDANCE FOR EDGE SPACE

Edge space was shown to be beneficial and therefore it has a potential role to play in a therapeutic environment. Furthermore, since the function of edge by design 'facilitates' connection to nature, then ideally, every built environment where a person with

dementia lives should provide architecturally as much edge space as possible, so the residents are not as dependent on the social aspects of the environment to fulfil their need for connection to nature. As part of a facilitating environment, edge affords them the option of fulfilling a connection to nature for themselves. To this aim, this section first states the definition of indoor and outdoor edge space with essential and helpful criteria from Study Three, listed here as design guidance. It then goes on to investigate how buildings might be designed so they provide more edge, and then how edge spaces in particular might be enhanced.

4.3.2.1 INDOOR EDGE SPACE

DEFINITION - An **indoor space** within the **edge** of a room with **furniture** for two people to sit or a **clear space** to stand **with support within 1.0 m** of each other **angled** to enable eye contact having a **window** (or having a **mirrored image** of a window) within their **90 degree** field of vision.

(Detailed descriptions of these terms appeared in Section 3.2.2.1)

Indoor Edge Space - Helpful Criteria - Built Environment

Seating

Choice –

- Seats facing in at least 3 directions are located in the room
- Seats in at least 2 different styles or materials exist, catering to different preferences
- Seats are arranged for individual or group seating in rooms with 5 or more chairs

Comfort –

Physically provided through textures & materials similar to a person's own furniture

Physical support for older people -

- Chair back upright with lumbar support
- Chair arms extend slightly beyond the length of the seat (by a minimum of 100 mm)
- Seat height at least 400-500 mm from the floor
- Sturdy, solid construction offering support for a person while steadying themselves, walking by, standing by it, or pushing themselves up from a seated position

Visibility –

Seating can be seen from areas outside the room, such as the adjacent corridor

Proximity –

Seating is near to a small table or ledge where a cup, plate or book can be placed

Windows

More than the number required by the building regs for a room of that size and use

Glazing bars not at eye level when sitting or standing

On more than one wall

With opening hardware that is easy to use - not stiff, heavy or requires staff or a key

Complex with panes that open in more than one direction to catch fresh air

With windowsills or handrails 60-90 cm from the floor for support while standing

Windowsills low enough (<601mm) to see out from seating positions

In internal walls to allow people in the corridor to see in and preview the edge space

Doors

Those into the room are not locked, are propped open or are left standing open so people can easily see into the room and do not need to open a door to enter

Acoustics

To increase audibility of conversation there is a mixture of soft and hard surfaces allowing both the high and low frequency sounds to be heard

Loud, abrupt, meaningless sounds (buzzers & alarms) occur less than once an hour

Loud, steady, meaningless sounds (hoover/carpet cleaner) occur less than twice a day

Clangs, rattles or bangs (plates, cups, cutlery, trolleys) are not audible in lounge areas

Meaningful sounds -

From inside with the windows closed, if nearby, church bells could be heard

From inside with the windows closed, if nearby, a passing train whistle could be heard

View Content

Contains objects (no smaller than a farm or school) as far as a mile from the window

Urban elements such as buildings, traffic, buses, bridges or roads

Transport locations such as a taxi stand, train station or bus stop

Rural elements such as tractors, farmhouses, barns, sheds, silos

Elements with potential to move in the wind (ornamental grass, flags, washing line)

Playgrounds, day centres or activity areas for children

Pedestrian activity such as walking a dog or children going to school

People parking and getting in and out of vehicles

People going in and out of houses or shops

Personal transportation such as bicycles or skateboards

Domestic activity such as people in their gardens, talking over the fence

Indoor Edge Space - Helpful Criteria - Natural Environment

View Content

At least 1/4 of the total view from the window is comprised of the sky (Measure this by standing within one metre of the window and drawing the window panes. Then draw a line across the panes where the land and sky meet. Is the sky portion at least 1/4 of the total?)

Landscaped areas including gardens, trees, lawns and planting beds

Water bodies (lakes, ponds, rivers) or features (fountains, fish ponds, waterfalls)

The horizon (enables seeing to a distance, sunrise or sunset)

Evergreen and deciduous trees, shrubs and groundcovers

A combination of hardscape, lawn and planting areas

Plants that flower such as annuals, shrubs, vines and fruit trees

Wildlife habitat – plants for nesting, foraging, food, nectar and shelter

Garden elements such as soil, compost, mulch, gravel, pebbles and sand

An ecosystem such as a wetland, coastline, woodland or moorland

Rural elements such as fields, stone walls, sheep, cows or horses

Rural elements such as stone outcrops, valleys, hills or mountains

Sports ground, fishing pond, a bowling green or a park

4.3.2.2 OUTDOOR EDGE SPACE

DEFINITION - An **outdoor space** between **20-30 degrees C** with **furniture** for two people to sit or a **clear space** to stand with support **within 0.5 m** of each other **angled** to enable eye contact within **10m of the door** and within **view of the entrance**. (Detailed descriptions of these terms appeared in Section 3.2.2.1)

Outdoor Edge Space - Helpful Criteria - Built Environment

Seating

- Choice – Seats facing in at least 3 directions are located in the edge
 - Seats in at least 2 different styles or materials exist
 - Some seats are permanently fixed and some are moveable
 - Seats are arranged for individuals, pairs of people or group seating
- Comfort - Physically provided through textures & materials similar to a person's own furniture
 - Seat material does not conduct heat or cold
 - Seating is sheltered or partly enclosed with an arbour, trellis, awning or umbrella
- Physical support for older people -
 - Chair arms extend slightly beyond the length of the seat (by a minimum of 100 mm)
 - Seat height at least 400-500 mm from the floor
 - Sturdy, solid construction offering support for a person while steadying themselves, walking by, standing by it, or pushing themselves up from a seated position
- Visibility – seating can be seen from rooms inside the home and from the adjacent corridor
- Proximity – Seating is near to a small table or ledge where a cup, plate or book can be placed

Doors

Outside from the EMI unit are unlocked daily, propped open or have automatic openers

Paths

Accessibility standards are met in the area for gradients, surfaces and handrails
 Paths exist with stopping, seating or leaning points every 10 metres

Outdoor Edge Space - Helpful Criteria - Natural environment

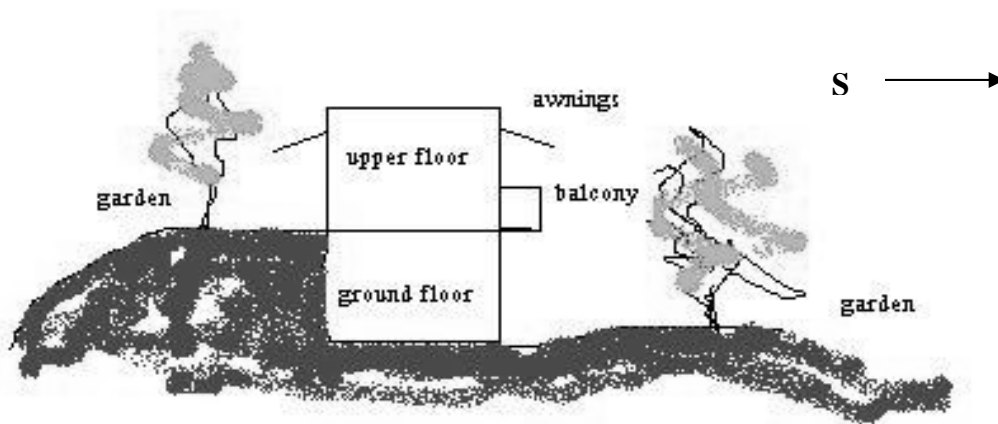
Outdoor area (or the view beyond the edge) includes:

- Perennials or annuals
- Vegetables, herbs or fruit
- Evergreen and deciduous trees, shrubs or groundcovers
- A combination of hardscape, lawn and planting areas
- Sensory plants such as herbs or fragrant plants
- Plants that flower such as annuals, bulbs, shrubs, vines or fruit trees
- Wildlife habitat – plants for nesting, foraging, food, nectar or shelter
- Garden elements such as soil, compost, mulch, gravel, pebbles or sand
- An ecosystem such as a wetland, coastline, woodland or moorland
- Rural elements such as fields, stone walls, sheep, cows or horses
- Rural elements such as stone outcrops, valleys, hills or mountains
- Sports ground, fishing pond, a bowling green or a park

4.3.2.3 HOW TO PROVIDE MORE EDGE SPACE

Study Three found that both ground level and upper level edge spaces were beneficial for different reasons. A residential environment therefore should aim as far as possible to provide both types of spaces for every resident. If a home cannot provide both ground floor and upper floor space, then providing ground floor space is preferable as it has more potential for affording them access to outdoor areas. Ensuring that residents can independently access outdoor areas from upper floors can be achieved architecturally in a number of ways. Figure 4.1 shows how an upper floor can be both a ground floor and an upper floor, one on each side of the storey. The resident could walk straight outside onto the ground from one side of the storey, and by crossing the storey they can enjoy the views afforded by a first floor vantage point.

Figure 4.1 **Building with a walk out from ground and upper floor**



Example of an upper floor having both a treetop view and a ground floor walkout

If the site is on a slope this can be achieved with the least amount of cut and fill. If the site is level, grading can be achieved given the soil excavated for the ground and lower ground floors, if the site is large enough to allow for the creation of a hill. Figure 4.2 shows a horseshoe-shaped building but a square or round building would work similarly. The ground floor could have a garden to the exterior of the building and the first floor garden can be built in the interior of the form, again using excavation fill. Orientation compensates somewhat for uni-direction of sun into lower floor.

Figure 4.2 **Horseshoe building with walk out on ground and upper floor**



A variation of this form might involve a rooftop garden area accessible from three different areas on the upper floor. Underneath the garden car parking could be organised and an entrance road so there is plenty to watch from the garden level.

Figure 4.2A Horseshoe with roof garden alternative

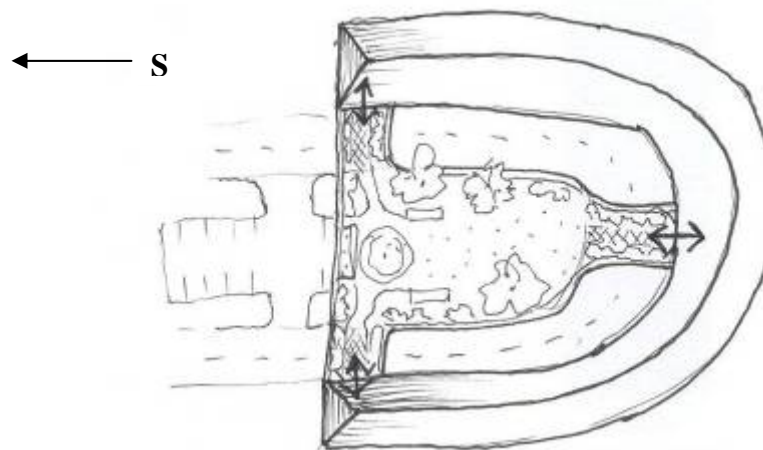
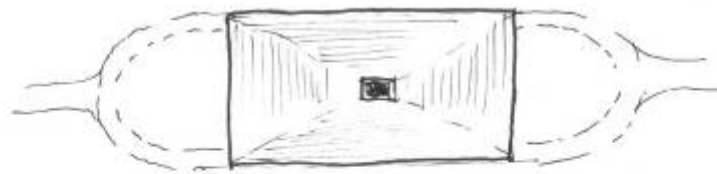


Figure 4.2B Section through horseshoe-shaped home with adjacent roof garden



The third example of how to ensure architecturally that residents can independently access outdoor areas from upper floors can be achieved with a split level arrangement shown below. There is a curved ramp on each side of the first storey which would lead from the upper floor down to the garden level, half a storey below. The ground floor garden level would slope up to a height of half a storey on two ends of the building to compensate. The ramps are curved to allow enough length to afford a very gently slope.

Figure 4.3 Split level with garden level half-way up



Plan view



Elevation

In designs in which a ramp is used it needs to be designed to be a mini-garden in itself to entice a person to initially step out into it. From inside it should look like a garden area, not a ramp that leads to somewhere. Once the person is outside they can become intrigued enough to go further along to the larger garden area on solid ground. But the largest impediment to going outside is often the threshold, so the entrance needs to be expanded into an inhabitable edge in its own right, rather than an abrupt change between indoors and outdoors. Once a person is fully outside, the journey that led them there must have been so gradual and subtle that the outside should feel like 'an outer part of in' - a continuum of safety and security, but with more sensory stimulation. The fourth example of independent outdoor access from all floors shows how multiple floors with rotated garden areas on each storey would step down a hillside.

Figure 4.4 **Rotating garden areas on circular building**



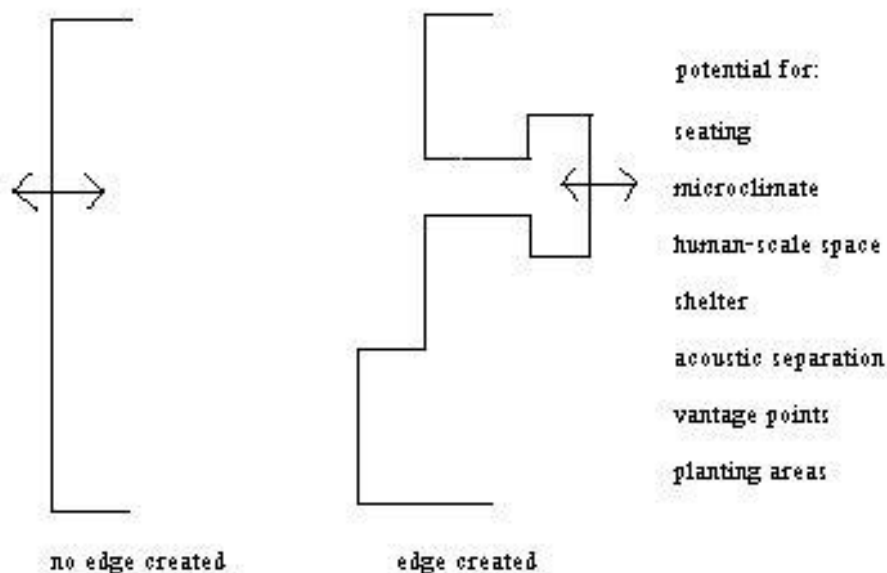
These four examples demonstrate how architecturally the building can maintain a relationship with the ground level that benefits easy access for residents. However, buildings are often not used in the ways in which they were intended. Therefore, the built and social environment must work hand in hand. See below, (Section 4.3.2.5) for suggested contributions of the social environment to connection to nature.

Size and complexity of building

Study Two suggested that small group living may correlate with increased connection to nature. The top five sites for potential for connection to nature were all group homes and the bottom four sites were all communal homes (Table 2.6). It was also found that the potential for connection to nature for residents was roughly three times as high in an EMI group home as it was for the residents in an EMI communal home. Small group

living is consistently recommended in current design guidance for dementia (see section 2.6), although the trend is towards building larger residential care homes. Ideally then, for routine connection to nature people with dementia should live in small groups in domestic size homes. Such buildings would be similar in size and have the same relationship to the garden as any normal house, or as most housing that is provided for people with learning difficulties. If the building cannot be small, it must be complex, so that there are aspects of it that are human scale and can potentially contribute to edge space. Complexity along the facade of a building affords more opportunities for outdoor edge space to occur than endless expanses of high, featureless walls. Indoor edges may benefit if the views created are better than the ones foregone. Daily life may be enhanced if the outdoor edge spaces that the added complexity creates are actually used.

Figure 4.5 Role of complexity in creating edge spaces – example of building façade (arrows indicate entrance to building)



Size and complexity of windows

To increase the flexibility of the indoor edge to allow penetration from pleasant sensations such as breeze, fresh air, fragrance and sounds, as well as to shield against unpleasant effects such as drafts, the window should be complex enough to offer the inhabitants a range of options. Multiple panes opening in more than one direction allow the person to operate the panes according to the amount and direction of pleasant stimuli. Glazing can also include skylights or sections of glazing in walls and ceilings to increase daylight into living areas and to allow a glimpse of the night sky. Big is not always better and the amount of glazing should be designed sensitively according to the

outdoor environment and the use of the room. Large expanses of glazing have negative effects such as solar heat loss, solar gain and collision hazard for birds in flight. Some people prefer net curtains for privacy. Such factors must be weighed, as well as the overall budget for glazing in the building. Complexity must also be added sensitively so as not to increase confusion.

- Design complex windows with a choice of panes opening in various directions
- Design windows on more than one wall and more than the required number
- Use tall windows or clerestory windows to throw light far into the room
- Use skylights or sections of glazing in walls and ceilings
- Use easy-open hardware on windows
- Design for wide, sunny windowsills which can hold personal items and plants



Figure 4.6. In the Czech Republic this type of window extends the growing season by affording a person their individual, miniature greenhouse for plants and ornaments. These two examples of double windows demonstrate the creative ways residents have personalised them, given the availability of the warmer space between the inner and outer panes. Below are other examples of double windows. When they are partly open the resident can smell the flowers and get some fresh air that will be warmer than outside.





Figure 4.7. The complexity of this window set affords unlimited possibilities to the resident to modify the temperature, breeze, sounds and sun entering the home. It also provides space between the two sets of windows for growing plants and displaying ornaments. Notice the pull-down shade hanging between the inner and outer windows as well as the lowest square pane which is openable.

4.3.2.4 HOW TO PROVIDE BETTER EDGE SPACE

The concept of an edge if applied more broadly can expand the amount and diversity of living areas within a home which afford a connection to nature. To expand the available edge space would make the rooms more useful by people with dementia as it would afford them more opportunities for sensory stimulation. From the research it was shown that given social interaction, edge may stimulate creative forms of self-expression and promote meaningful engagement with the wider world. Creating outdoor rooms in which the microclimate is more comfortable to older possibly frail people would extend opportunities for connection to nature by lengthening the outdoor season. This is being done successfully in countries across Europe.



Figure 4.8. This example shows the transformation of space made possible by membrane structures when used to create a sheltered, heated year-round outdoor dining area in the central courtyard of a building.



Figure 4.9. This collection of three images (one on the next page) of porches, plantings, awnings, complex windows and roof lines shows how elaborate the edge between indoors and outdoors can be. People who dwell within such architecture have a high degree of choice and control over their daily and yearly connection to nature in a relatively little space.





Figure 4.10. This house in Langesund, Porsgrun Commune, Norway is two storeys with a ground floor entrance on both storeys owing to its position on the steep slope overlooking the fjord. This arrangement was mentioned in section 4.3.2.3 and shown with Figure 4.1 as a way to utilise a slope to afford a person architectural outdoor access, avoiding confinement to an upper floor for a person with dementia.



Figure 4.11. This building contains flats for older people provided by social services in the Sabbatsberg area of Stockholm, Sweden. The adjustable striped awnings and large openable windows on three sides of a common room are situated directly adjacent open-air porches (pictured on the right) on all floors.

The balcony below (Figure 4.12) is on a nursing home (sjukhem) where some people with dementia also live. It is also provided by the city in the same vicinity as the building above. On the same campus the buildings are connected by open space with mature trees. A ‘senses’ garden ‘Sinnenas Tradgard’ was designed and built especially for the residents in the centre of the nursing home complex. Both the nursing homes, of which there are two on either side of the senses garden, and the flats for older people demonstrate modified use of the building edge to extend the living space and to facilitate a connection to nature. The iron balcony railings hold the geranium-filled planters just far enough out from the building edge that they can be watered by the rain.



Figure 4.12 Adolf Fredrikshuset sjukhem adjacent Sinnenas Tradgard (senses garden) in Stockholm.

‘Failed edges’ (section 3.2.8.3) resulted from a lack of spatial integration between seating or standing areas, the proximity to stimuli and the amount to which the environment provided relative comfort with which the sensation could be experienced. There are several design strategies for addressing these failings.

Strategies for fixing ‘failed edges’

- Place seating ‘in the way’ with a view towards the stimuli rather than ‘out of the way’ with a view towards the interior of the building
- Place seating with a view in front or to the side, not directly behind the seat
- In old buildings use the thickness of walls to create window seats
- Create space that ‘thickens’ the edge between indoors and outdoors such as wrap-around porches and covered walkways under the eaves of buildings
- Use of taller ceilings allows for higher windows and use of clerestory windows
- Extend the shelter of the roof outwards to shield from direct sun
- Use awnings to moderate the effects of hot sun entering the room
- Use shades to moderate the effects of glare entering the room
- In conservatories or sun rooms use automatic ventilator/extractor devices to minimise solar gain
- Heat conservatories or sun rooms in winter to compensate for heat loss

4.3.3 EXAMPLES OF EXISTING DEMENTIA CARE FACILITIES

Throughout Study Three, edge spaces were being investigated for their potential to enable a person with dementia a connection to nature and to another person. The spatial typology of edge space served to enhance their ability to communicate, and hence to contribute to positive personhood through verbal manifestations of self. The spatial typology of ‘edge space’ has been developed throughout this research. Edge spaces that do exist have been shown to support selfhood if they are used in the manner outlined in the thesis. Therefore, because it has been shown that it can potentially contribute to well-being, edge space would be a beneficial component of a home. Two dementia care settings in the UK will now be shown as examples of how existing buildings are affording residents a connection to nature, and therefore an opportunity for self expression if the social environment is likewise facilitated.

4.3.3.1 DOMUS, LONDON UK

‘Domus is a ‘high-level care system principally for older people with mental health problems which has been pioneered and developed in practice by the Care and Support Department of the Horizon Housing Group. Each Domus provides a domestic atmosphere rather than an institutional one, where residents are encouraged to make active choices and decisions about many of the day-to-day things that affect them. The concept was the inspiration of Professor Elaine Murphy and Professor Alastair McDonald, two consultants in Psychiatry of Old Age at the formerly Guy’s and St. Thomas’ NHS Trust and predecessor to the current South London and Maudsley NHS Trust...(they are) highly staffed with a mix of first level nurses and other care staff...’ (brochure, p. 2).

The term ‘domus’ is Latin for ‘house’ and is the predominant UK example of small group living for people with dementia in a purpose-built care setting. It should be noted that the term ‘small group living’ is used also to refer to a corridor designated as an EMI unit, and providing its own lounge and dining room. The domus is a self-contained home caring for a small group of people, generally less than 20, and not part of a larger complex. One assumption behind the domus concept is that the needs of the staff are as important as those of the residents.

The domus provides nursing care as opposed to residential care, the level of registration enabling the higher staffing levels. There are six Domus nursing homes in the greater London area, owned and operated by Horizon. An evaluation of residents moving from a long-stay hospital ward into a domus home reported that ‘residents cognitive function improved steadily’ over the follow up period, with ‘some improvement also in residents’ self-care (ADL) skills’ (Dean et al., 1993). Staff rated residents’ communication skills as ‘significantly improved’ and ‘compared to baseline, substantially higher levels of activities and interpersonal interactions were observed at follow-up...’ (p. 807).

Figure 4.13 **Domus, London, UK**



Access to patio area from small lounge



Windows and door of small lounge



Patio area with tables and chairs



High ceilings & windows into large lounge



View to patio from large lounge



Open door & handrail to large lounge



Roof structure over walkway to large lounge



Views in and out from the roofed walkway

The design of the newest of the domus buildings (Figure 4.13) has won awards for its innovation. Built in 1997, it cares for 16 residents. Design features include ample uses of natural light, use of non-institutional fixtures and natural materials, high ceilings in day rooms and lounge areas, and massing and treatment of the external façade which enables the building to blend into the neighbourhood. The homes also were designed with domestic scale, accessible garden areas.

Access by residents in this domus to the outdoors was facilitated both architecturally and socially, by the building design and the care practice of open doors to the outdoor areas. Movement of residents was spatially contained to a paved patio area directly adjacent two communal lounges where residents spent most of the day. Passage up into a more extensive grassed area above the patio was blocked by a gate intended to ‘ensure resident safety’ by preventing them from independently using it. Efforts made in designing and developing this upper garden area were not fully realised in practice, and as a result the residents do not benefit from the garden areas that were off limits. Even in light of this limitation, the garden area was clearly visible if not accessible.

Of the many homes visited during the research, good edge spaces were rare. This home had both an indoor edge and an outdoor edge composed by this combination of lounge and patio area. It was a well-designed edge giving high potential for connection to nature for the following reasons:

- The external wall of the building contained an open door into each of these rooms, allowing free movement between the indoor and outdoor spaces
- This circular route was especially enjoyed by residents who were ‘on the go’
- The roof was designed to overhang the walkway outside one of these doors, creating a sheltered space with a hand rail to stand or walk, even in the rain
- Visibility was insured by a predominance of windows in both rooms, providing visual access both into and out of the rooms, further encouraging residents to move between them, and enabling staff to notice such movement
- Views up into the garden were ample from many seats in the rooms
- Open doors allowed for good air circulation
- High ceilings in these rooms and sloping roof lines as well as clerestory windows provided natural light to enter from three directions most of the day

4.3.3.2 CARE HOME, YORKSHIRE, UK

A second example of good connection to nature was found in a care home in Yorkshire. The building was converted from a large family home 18 years ago and has since had an addition constructed behind the main section of the home. It originally offered placements to 12 and now 24 residents with the criteria of having dementia and being mobile at admission. Age is no barrier as the home is registered for both young and old people with dementia. The home is owner-operated, allowing complete control, from creating the vision of providing a 'haven' to implementing it. Support staff, such as the combination gardener and handyman, are also qualified carers and overlap of duties is part of the ethos of attachment, not detachment, with residents. The owners believe that 'people with dementia are perfectly capable of leading normal, happy lives provided that the environment is designed to meet their needs, rather than expecting them to fit into environmental limitations.' Their philosophy is to care for people with dementia in a 'homely, family environment' with a 'normal level of risk-taking and freedom of expression' without the 'dehumanising effects created by the administration of sedating medication...that people with dementia will function at a higher level, and their intellect will remain accessible if tranquillisers are not used' ... (brochure, n.p.). Furthermore, there is a 'sense of freedom from entrapment and failure' afforded by the open-door policy.

The home is walking distance to a small village with a post office, pub, park and grocer, enabling daily walks for residents. The house is set in the middle of a large garden with a secure perimeter, while all doors to the house remain unlocked year round. A conservatory room was added onto the front corner of the home looking southwest towards a large spreading beech tree and a wide herbaceous border of shrubs, flowers, bulbs, herbs and a small pond from an ancient free-flowing spring.

One reason the building is able to retain a certain structural level of connection to nature involves the building regulations concerning fire safety (Section 2.2.4.1). Current standards would require the staircases be enclosed and compartmentation be used throughout. Because registration for the older part of the home occurred prior to later amendments, the front entrance foyer is full of light and fresh air with a front door that is always open and residents standing or sitting in the vicinity most of the day.

Figure 4.14 Care Home, Yorkshire, UK



Front garden with seating & borders



Front façade showing conservatory room



Conservatory viewed from the garden



West entrance to conservatory



Conservatory and front entrance porch positioned on the front and corner of the home are vantage points to the parking area, front gate, and front and side garden areas.



West side of conservatory room showing window openings and bench outside



View to garden from conservatory

Figure 4.15 Features of Edge Space, Yorkshire, UK

Walking route through the conservatory, music room, corridors and the outside allows year round freedom of movement between indoors and outdoors.

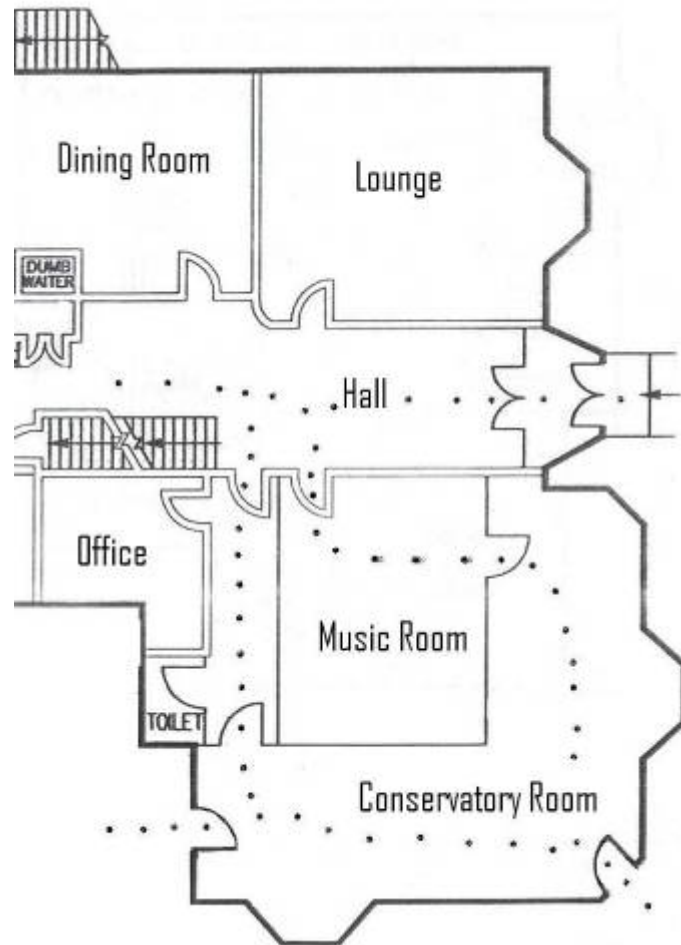
Wide angle view to the garden is possible from the 'wrap around' conservatory room.

Location of conservatory and front entrance are on the south side of the building affording sunshine directly into the windows to warm the rooms.

Furniture arrangement allows for a person to choose to sit in the sun or out of it, but still not far away from the windows and the view.

Visitors enter from this direction. The front gate and the parking area are clearly visible.

Front entrance hall is a perfect edge in all kinds of weather, a location to watch the activity and a pleasant sun-filled space to enjoy fresh air and conversation.



Front entrance hall with plenty of light, air and seating

This section has given two examples of existing dementia care facilities demonstrating good connection to nature for the residents. This was facilitated not only through design and layout of the building and site, but through the actual use of the building made by care staff and supported by management. This reinforces a finding of the thesis overall that a care environment is both built and social. In order to afford residents a connection to nature these two forces must be synthesised around that common purpose.

4.3.4 CONTRIBUTION OF THE SOCIAL ENVIRONMENT TO CONNECTION TO NATURE

The residential care home environment is a complex dynamic process involving built as well as social aspects. Connection to nature is heavily impacted or facilitated, enabled or challenged by both. Buildings are not often used in the manner in which they were designed. The following list contains suggestions that begin to address these issues.

- Open windows daily for fresh air
- Ensure doors to outdoor areas are unlocked and free to use every day
- Ensure seating and tables are clean and in good repair
- Assist residents to personalise wide, sunny windowsills with plants, belongings
- Show and assist residents in how to open and close the windows and doors
- Invite residents for a short daily walk round the garden or patio
- Take residents outside and encourage visitors to do so
- Know the history of residents and stimulate chat about their houses and gardens
- Providing opportunities to see outside and to go outside are equally important
- Create daily activities such as bird feeding (breakfast scraps, suet, nuts or seeds)
- Engage residents in making habitat such as a nesting box, feeding station or bat box
- Engage residents in housekeeping such as washing clothes and hanging them outside
- Plan on serving meals or drinks outside
- Engage the residents in using a gazebo, greenhouse, shed or summer house
- Engage residents in making art and signage for the garden and outdoor areas
- Engage the residents in using a clothes line, BBQ, sports equipment
- Keep water features such as fountain or birdbath cleaned out, filled up and working
- Plant up hanging baskets, tubs and plant pots
- Involve family and friends in outdoor projects at the home
- Have an Easter egg roll or a bonfire night
- Involve local gardeners by offering them a patch of land, a hose pipe and a hot meal

4.4 IMPLICATIONS FOR RESEARCH METHODOLOGY

There are three general areas of research methodology to which this thesis has implications. They are the inclusion of people with dementia in the research, the adoption of an ecological and mixed-method approach to the study design, and the development of a discourse analysis method. The first two will now be discussed as the analysis method was discussed in Chapter Three. Because the views of people with dementia are rarely sought (Moriarty & Webb, 2000; Zarit et al., 1999), there was throughout the intention to include people with dementia directly, rather than rely on proxy accounts alone. Including the person with dementia in research is not easy but it is essential and rewarding. A recent article entitled ‘Make it easy on yourself! Advice to researchers from someone with dementia on being interviewed,’ supports this position and discusses the inherent difficulties and ways to overcome them (McKillop & Wilkinson, 2004). Study Three extended the user-led methodology beyond simply including their voices as in Study One, but to actually enable them to lead the discourse into the areas they desired and found meaningful.

Findings concerning the person’s meaning, use and perception of space were possible by taking an ecological, mixed-method approach which afforded insight into care practice as well as the needs and demands of the person and the environment. Lawton, when writing about rating scales for dementia care environments, felt that ‘the interface of person and environment in real situations may be simply too complex to capture in a linear experimentally controlled test’ (Lawton, 2001, pg. 61). Likewise, it has been argued that, ‘case studies, single subject experimental designs, tightly controlled quasi-experimental and experimental designs are needed to advance knowledge in this important area’ (Marshall & Hutchinson, 2001). The need for an ecological approach to research has been argued recently from the perspective of physical activity for older people (Satariano & McAuley, 2003) in terms of the intersection of the capacity of the individual and the demands of the environment, because characteristics of the built environment affect patterns of function and disability. ‘Those with greater access to either exercise equipment or walking paths are more likely to use those resources’ (ibid. p. 185).

The current work has an implication for research by calling for an integrated approach ‘to target directly the person-environment interaction...to examine the mediating and moderating role of beliefs, emotions, coping strategies, and physical and social environments so that we can develop and evaluate interventions to enhance behaviours and reduce late-life disability’ (ibid. p. 186). Such an approach has been termed ‘transdisciplinary’ which implies the ‘use of concepts and methods of a variety of scientific disciplines...to elucidate mediating mechanisms...a complex interaction of individual and contextual factors that no one discipline or level of analysis can adequately address’ (King et al., 2002). Kitwood wrote of research that it should be designed holistically, or more along the line of research and development (Kitwood, 1997). Researching human-environment interaction requires an integrated approach if the ‘why’ of the phenomena is to be found. An ecological approach (herein termed ‘engagement research’) necessitates a time investment, as any environment is a process and not a snapshot, and to study a place is to unpack the underlying processes of which the physical features are only an indication - place is a study of process (Chalfont & Rodiek, 2005).

‘While standing outside a care home recently wondering where we might build a greenhouse, I noticed a piece of bread and jam on the ground. The next morning it was a handful of rice crispies. Looking up, I realized it had come from a resident’s window. Stepping back out of the way and watching for a moment I saw the sparrows return to their breakfast. That lady who lives upstairs is place-making every day at the building’s edge. There are more birds in the garden because of her. Daily life is the action of making a place, and the edge is where most of the action occurs. Any place we investigate is merely a snapshot of a process. But by looking closely at interactions, we can better understand the energy and dynamics that drive the process of place-making and, in so doing, make better places. Think of a beach. Every day it is different. A beach is an edge between water and land, but it is also a process affected by wave dynamics, sand size, sea level, and the moon. Attempts to combat beach erosion with concrete battlements often result in disastrous effects, but wise land use and re-vegetation actually build the coastline. As the coast builds, life emerges—sandpipers, fiddler crabs, sand castles, surfboards, and corn dogs.’ (ibid., p. 342)

The experience of researching these homes over a period of 2-3 years pointed up the cursory level at which most research into dementia is conducted. Another aspect of in-depth observations is the potential to pick up much of the body language and non-verbal communication that is often missed during short exchanges with participants (Hubbard, Cook, Tester, & Downs, 2002). The observational aspects of studies such as these are a move towards a more ethnographic approach with its ‘emphasis on the person’s perspectives and meanings’ which ‘has the potential to provide a deeper understanding of the experience of dementia’ (Thompson, 2005).

4.5 IMPLICATIONS FOR CARE PRACTICE

The current work responded in part to the difficulties care staff experience in terms of providing a connection to nature for their residents. Good-hearted attempts often fail for reasons identified in Chapter Two. There is a low level of awareness among staff about the benefits of connection to nature. This was evident by the positive effect SLANT had on a staff member who trialled it in the home:

C: *'I never thought about a herb garden before but that's a good idea.'*

This applies to family carers as well who may welcome such information. There are implications for care practice such as changing routines to include daily contact with nature, rethinking how nature can and is enjoyed by residents, and then planning for daily contact with nature in meaningful ways. There is a potential to include nature into the day to day routine of the home, but this will not happen automatically. A short walk into the garden after dinner may need to be actually written into the care plan.

Another implication of this research involves the disparity often found between the building as it was designed to be used and as it was actually used. If outdoor areas are deemed unsafe by staff and the management takes no steps towards facilitating use by staff and residents, then the potential for connection to nature outside evaporates. Obviously a patio on the north side of the building in a home in the north of England is a design issue not easily resolved. But if paving, seating, scheduling, routines and care priorities are addressed, and if top-down support is clearly communicated from management to team leaders to care assistants and domestic staff, supported through various company policies and initiatives, including active encouragement and involvement in the life of the home by relatives and friends of the residents, then the potential to increase the well-being of residents with dementia through enhanced connection to nature is feasible.

Movement of residents inside the home is often discouraged by care staff who encourage residents to sit down rather than move about. This is often done in the interest of safety, using the logic that if a person is sitting they are less likely to fall. But observations during the research revealed that inordinate amounts of time spent sitting

actually lessened a person's ability to walk, because strength and balance were compromised by such inactivity. Sitting may in fact be contributing to falls, an area which needs some research. Concerning connection to nature, when a person walks they receive sensory stimulation from daylight and fresh air in various rooms as they move around the home. The person may also have access to views in different directions and of different outdoor areas, all of which might encourage a person to independently go outside. Such stimulation should be encouraged through care practice.

There are often difficulties involved with changing practice, including lack of time, energy and resources; lack of multidisciplinary teamwork; reluctance to change practice; an unstable workforce and the lack of a talking/supportive culture (Meyer et al., 2001). But there are also benefits for staff and residents alike, due to mutual enjoyment of connection to nature, especially by staff who spend their shifts largely indoors, often in overly warm rooms, at times accompanied by unpleasant smells. If care practice and building design are developed simultaneously, integrated solutions can be found to address the human needs of those who live and work in the home.

One set of findings uncovered through the investigation around connection to nature concerns general quality of life. Although there was great fluctuation between homes and between different residents, there were also some common concerns for a number of the residents. In terms of residential care provision, people expressed unhappiness, boredom, anger and resignation about their lives spent living day to day in a care home. Some people commented that it was an under-stimulating and restrictive environment in which they had no choice as well as no hope of release. Several people did not know why they were there or when they were leaving. They felt the staff routinely lied to them and evaded questions. Others felt they were being held against their will or that their life circumstances prevented them from ever leaving the home. Some people felt deprived of any role in their own care. There was often a mis-match between people living in close proximity to each other who had starkly different levels of ability and need. There was little scope for exercise, fresh air or involvement in the wider world. Over the 3 years of the thesis research, residents were observed declining physically as a result. People were sitting a large amount of their day, their legs and feet were swollen, they had increasing difficulties walking and even getting up from a chair. Although not the topic of the research, just from general observation and talking regularly to the residents, a case could be made for learned helplessness and

institutionalised disability. People largely had nothing to do. Due to the impression that they were a short-stay visitor in a day centre, school or hospital of some sort, most people made no effort to autonomously engage in their environment, thinking they didn't live there and those in charge would do it (open a window, turn on music, set the table). These observed realities of daily life in residential care must be addressed - by creating environments which better match people's diverse needs, changing 'cared for' to 'cared about,' and by respecting people's needs for truthful and timely information.

4.6 CONCLUDING COMMENTS

Relationships between people and place inform and determine the personal meanings, uses and perceptions of space, which are of particular relevance to the study of dementia care environments. This thesis has attempted to understand the ecology of the residential care home environment by studying the relationships between the architecture, the people who live, work and visit the homes and the nature that permeates them, with the intention that such an investigation may contribute to improved well-being by influencing design and care practice. Evidence has been provided about the importance of connection to nature, the role of the built and social environment in facilitating it, and the creative ways a person with dementia uses nature to manifest selfhood and thereby improve their own well-being.

A problem identified from the literature review was that there appeared to be gaps between research, design and practice.

'The relative failure of research to be translated into workable solutions can be attributed in part to the complex issues surrounding the 'theory-practice gap', but recently several commentators have questioned the narrow and restricted focus of much research which has failed fully to reflect the dynamic and changing nature of the experiential world of PWD and their families.'

(Nolan et al., 2002, p. 195)

This thesis is an effort to bridge that gap by investigating the complexity that contributes to a person's experience, and then to apply this insight towards the design of the built environment and the improvement of care practice. Architecture is inherently interdisciplinary and therefore a logical home for investigations into dementia, a disability of environment as well as mind.

The research objective required three separate studies to achieve, each leading iteratively from one to the next. In that sense the research was an exploratory journey unfolding in light of new findings. But throughout it the candidate had been driven by a puzzling phenomenon. In his travels he found there was some innate attraction for the edges of homes. Perhaps it was instinctual.

Figure 4.16 **Inhabiting the Edge**

Cats and puppy in doorway, India.
Boy in window, Spain.



If dementia moves us closer to our instincts then to better understand the edge is to create better homes for people with dementia. The concept of edge space has been shown to be a useful bridge between architecture and care practice. Therapeutic environments for people with dementia have no strictly architectural solutions, but those residing within the integration of people and place. Nature and care-giving may be the healing forces with which to alchemise the environments of dementia care. Ecological research is essential to moving that work forward.

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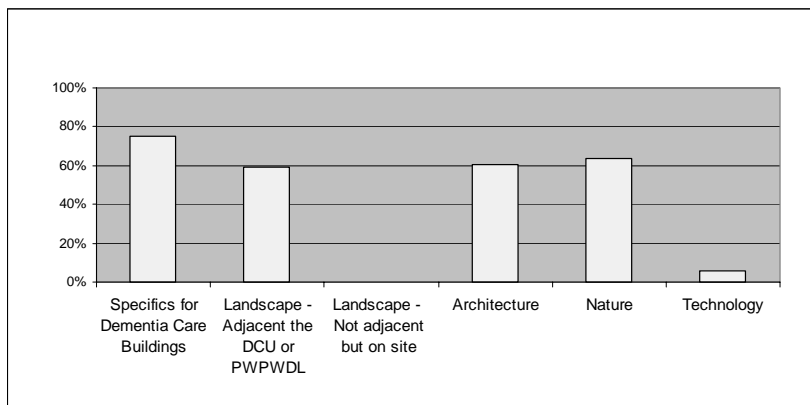
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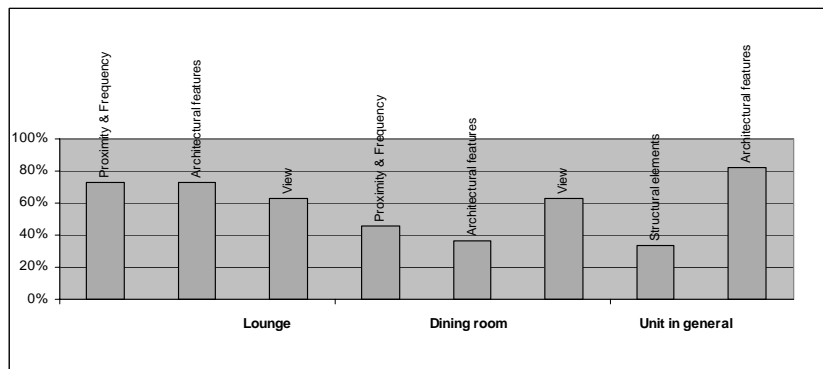
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APPENDIX A – Study Two 14 sites

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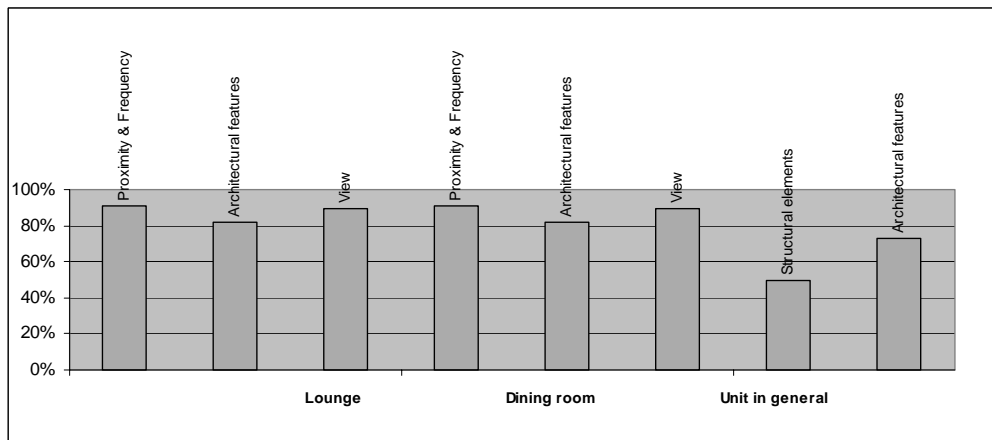
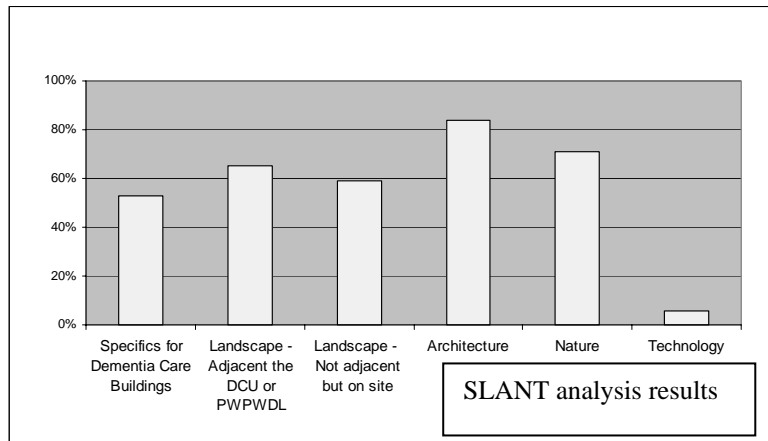


SLANT analysis results



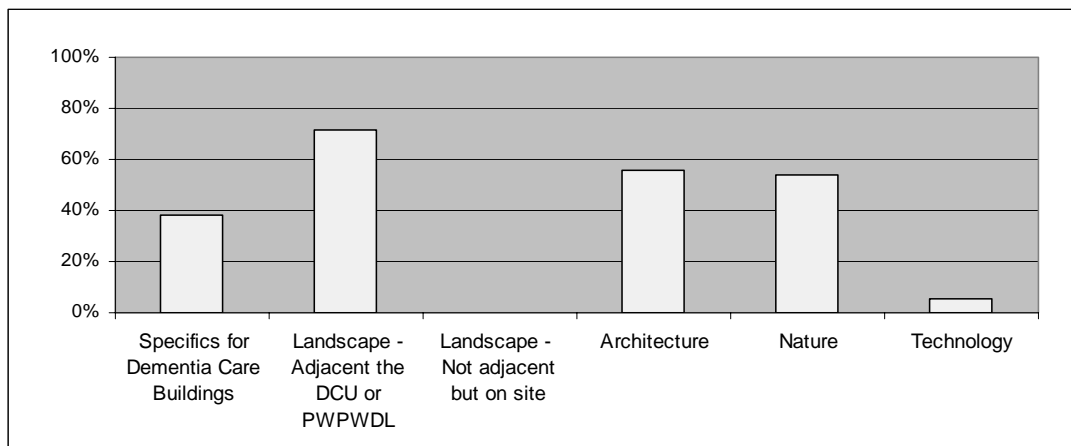
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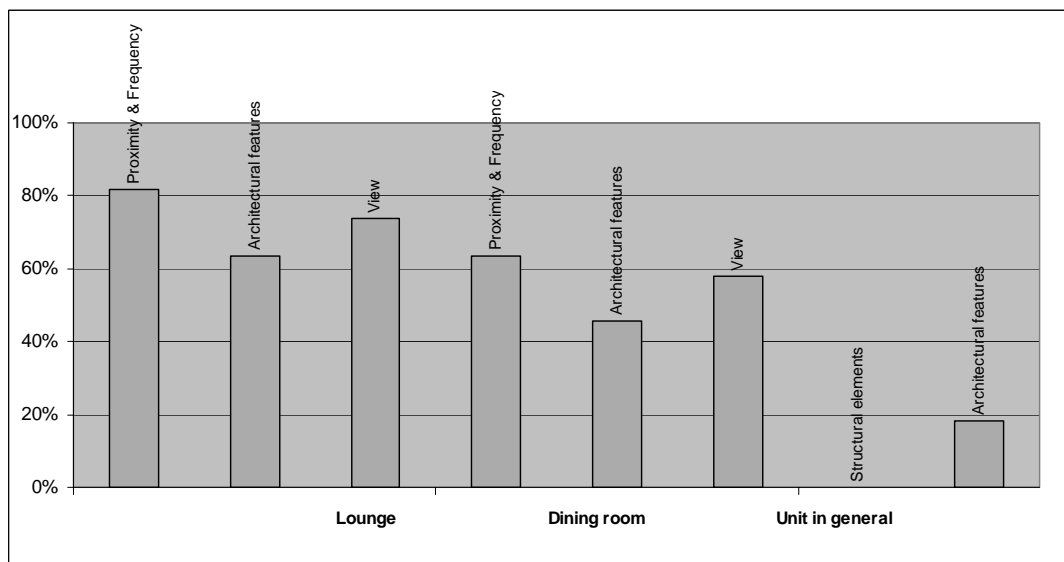


Results of domain: Specifics for Dementia Care

Site S



SLANT analysis results

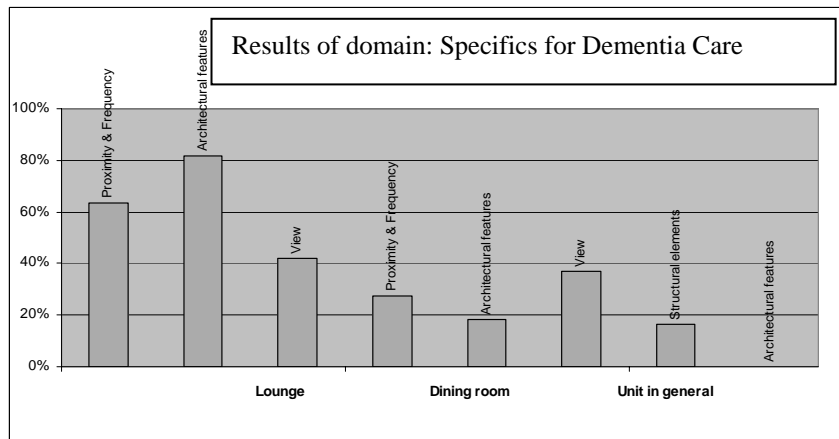
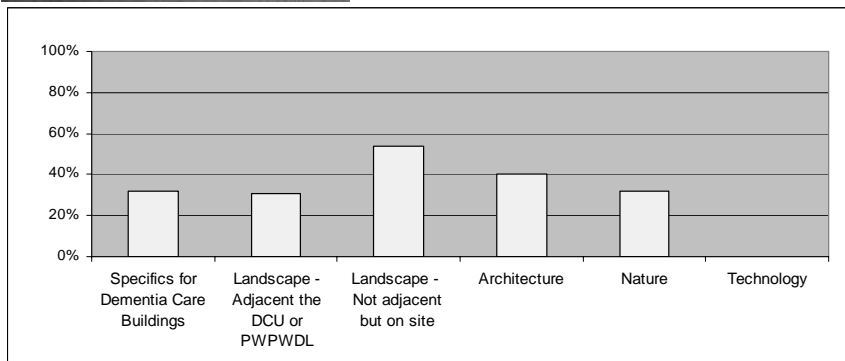


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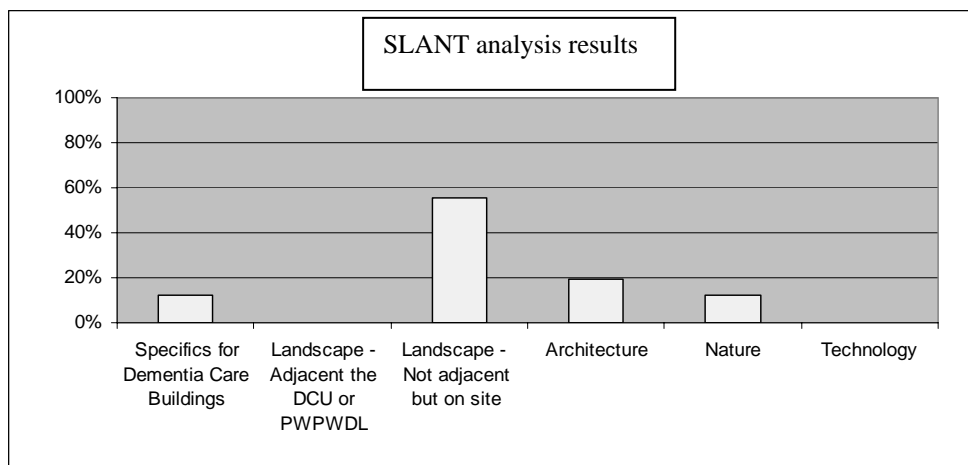
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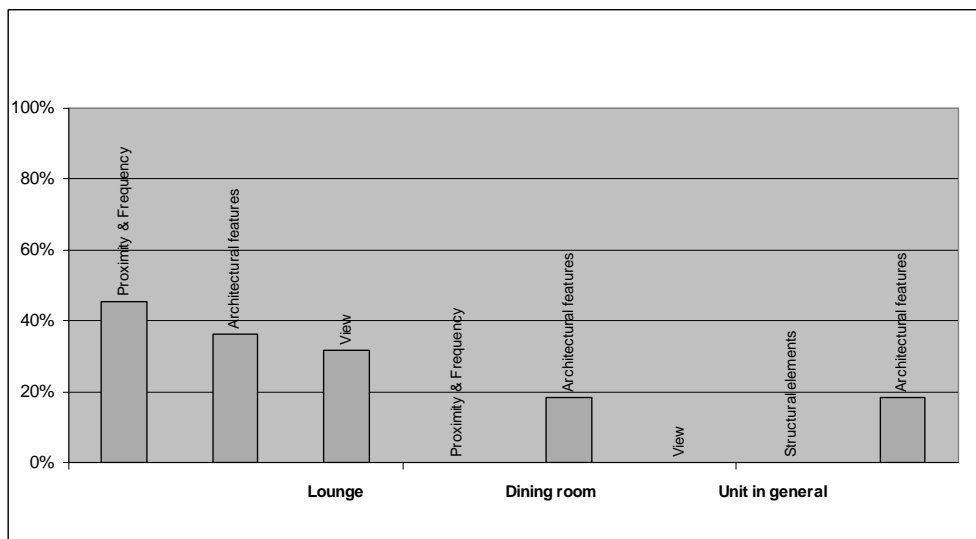
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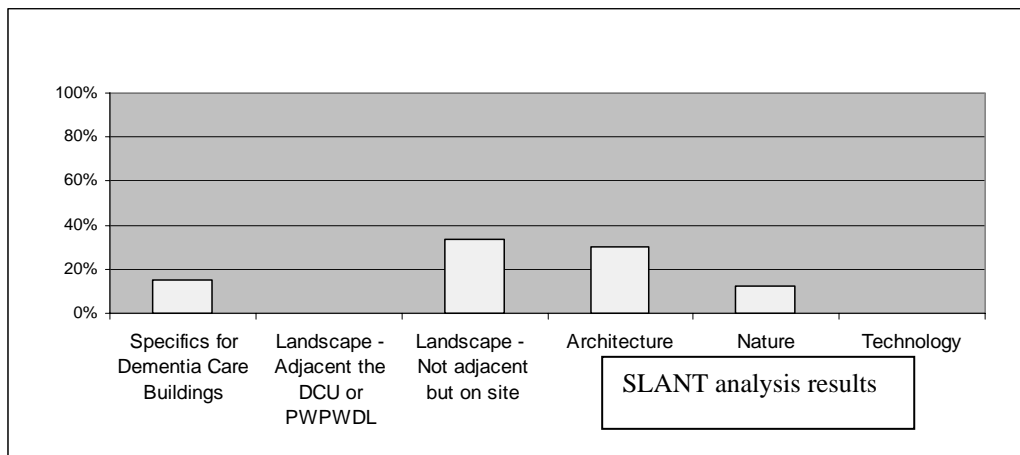
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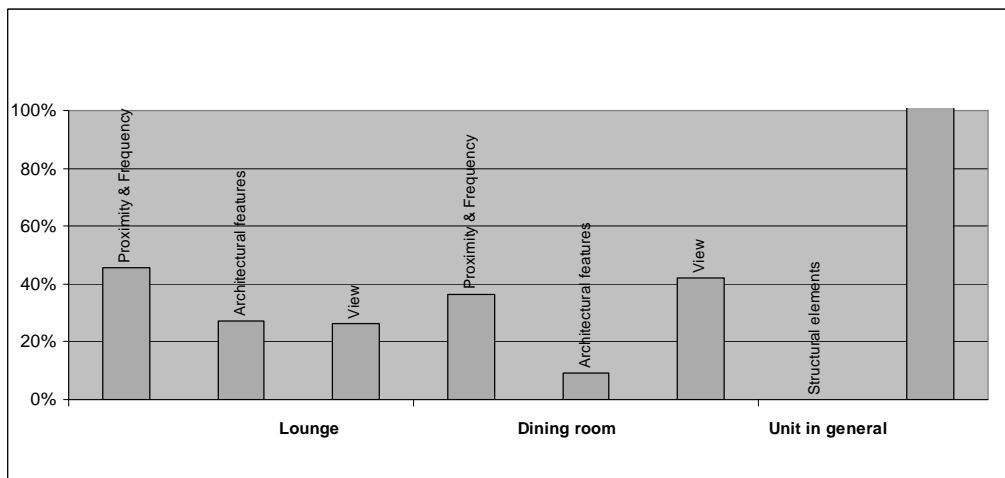
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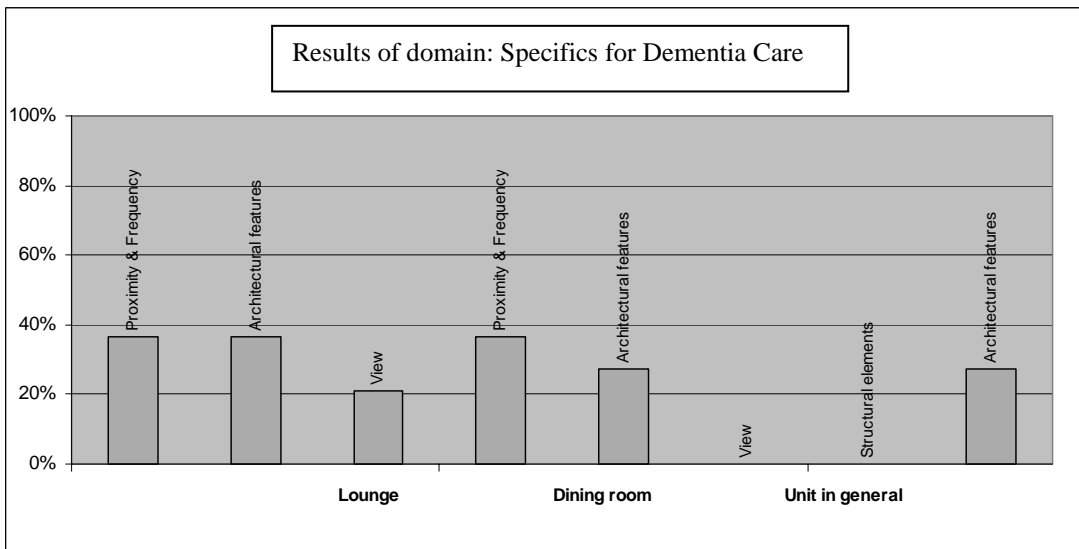
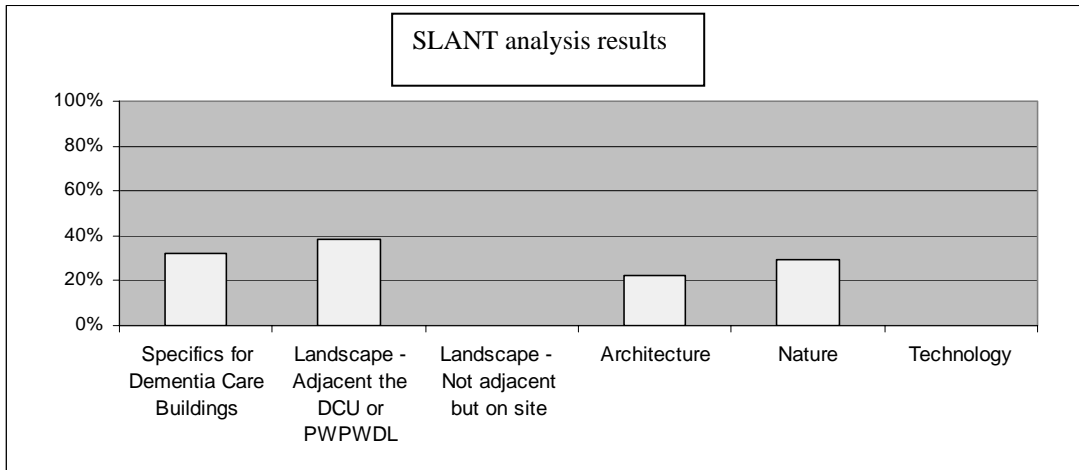
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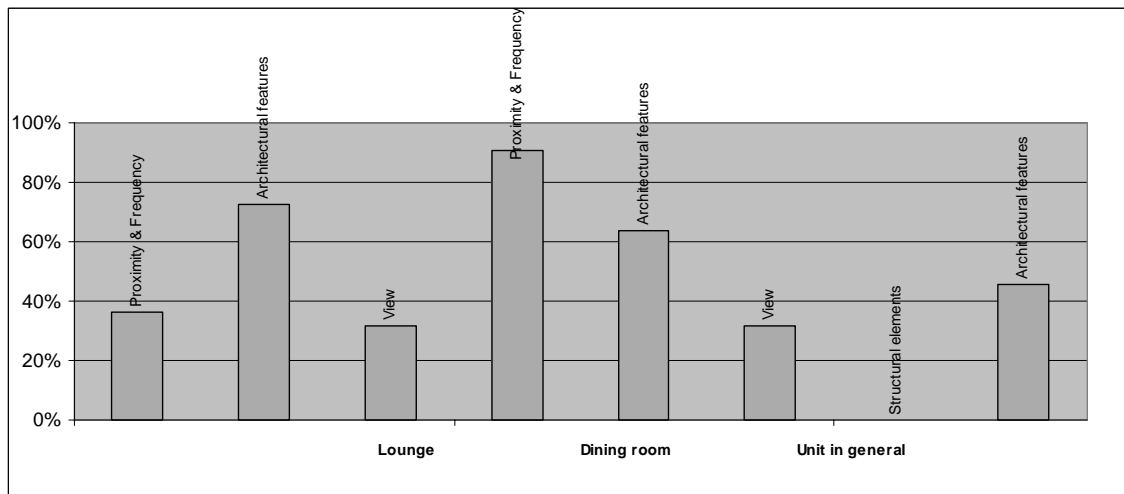
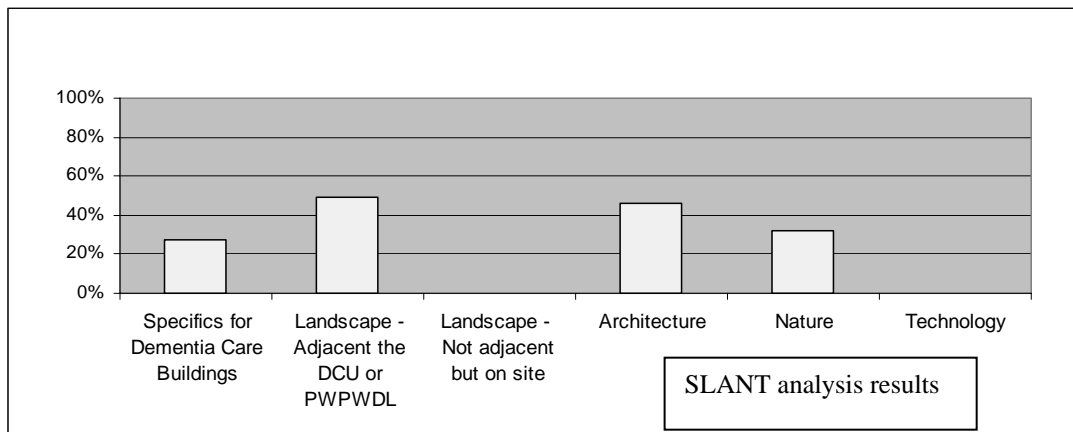
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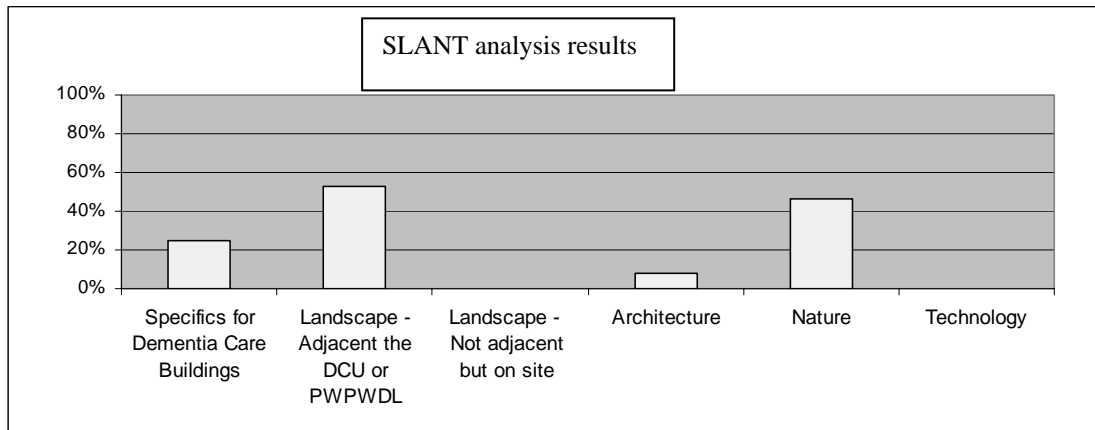


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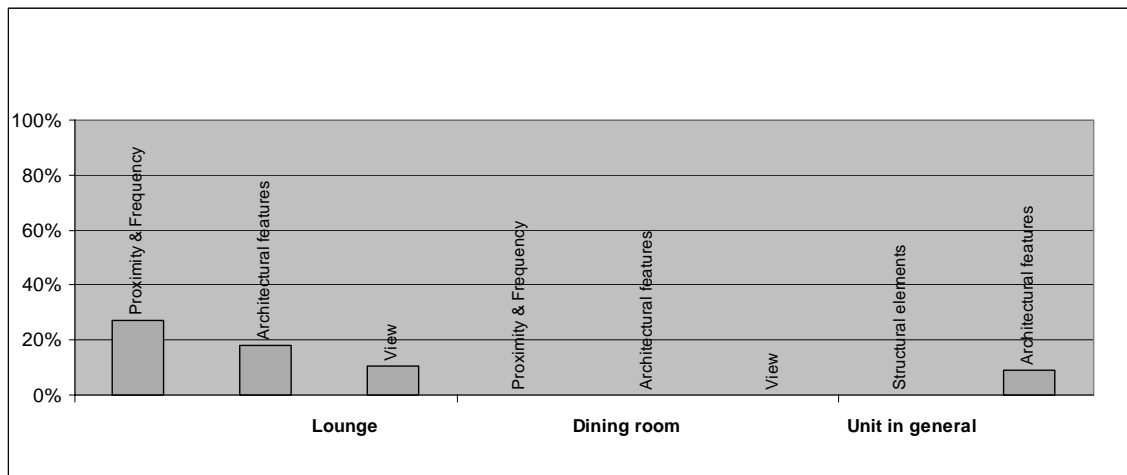


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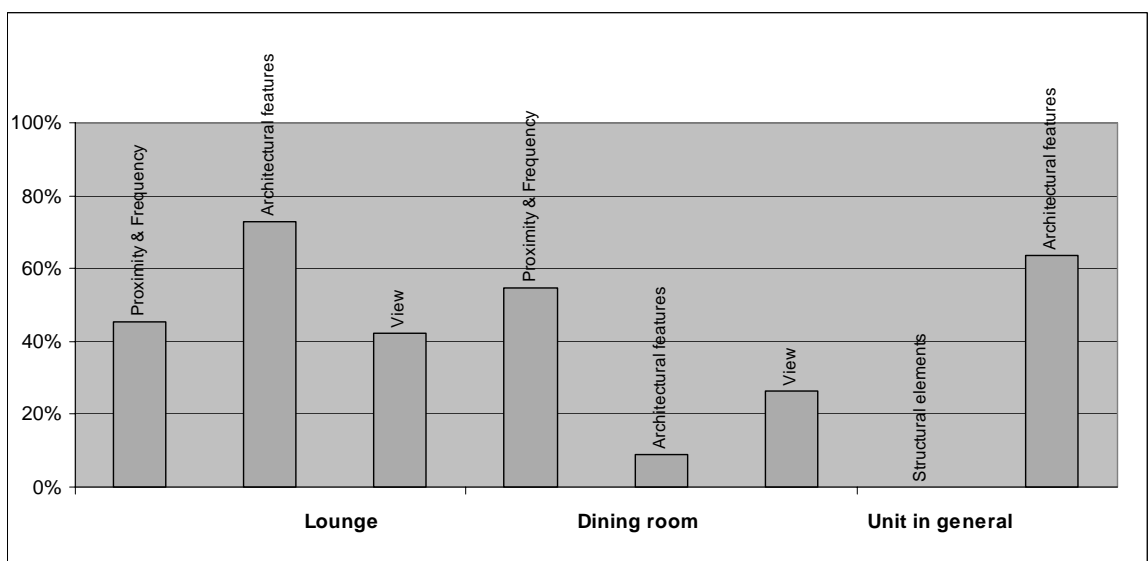
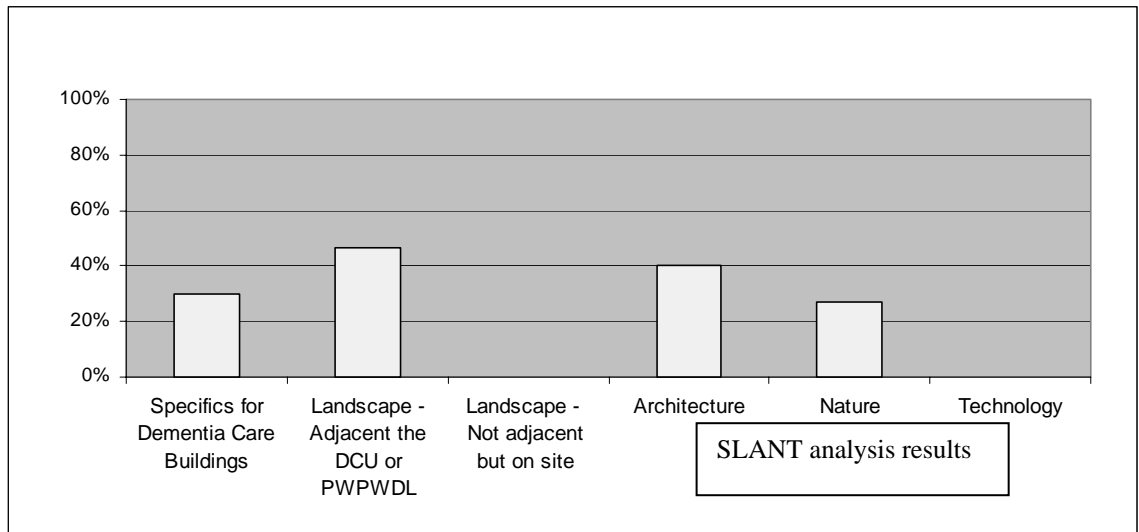
Site BT



Results of domain: Specifics for Dementia Care



Site AH

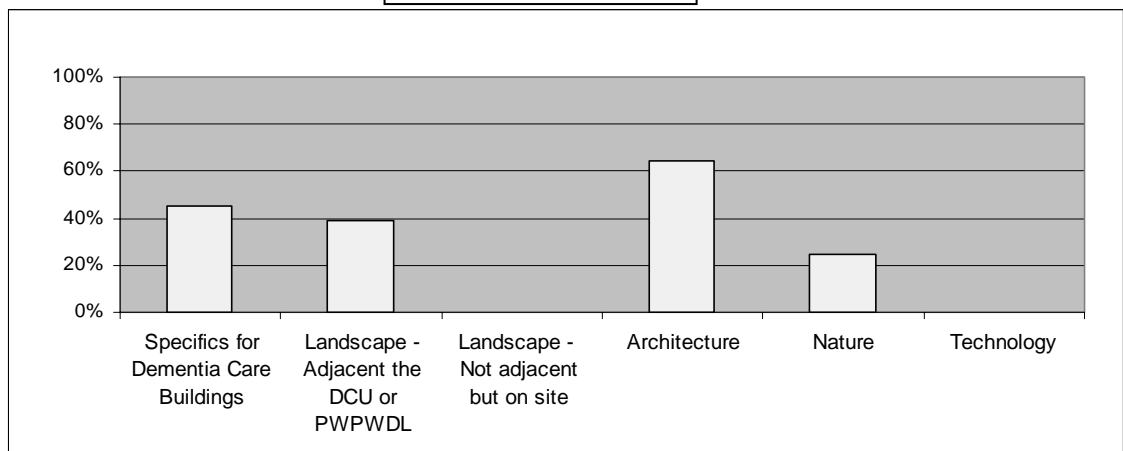


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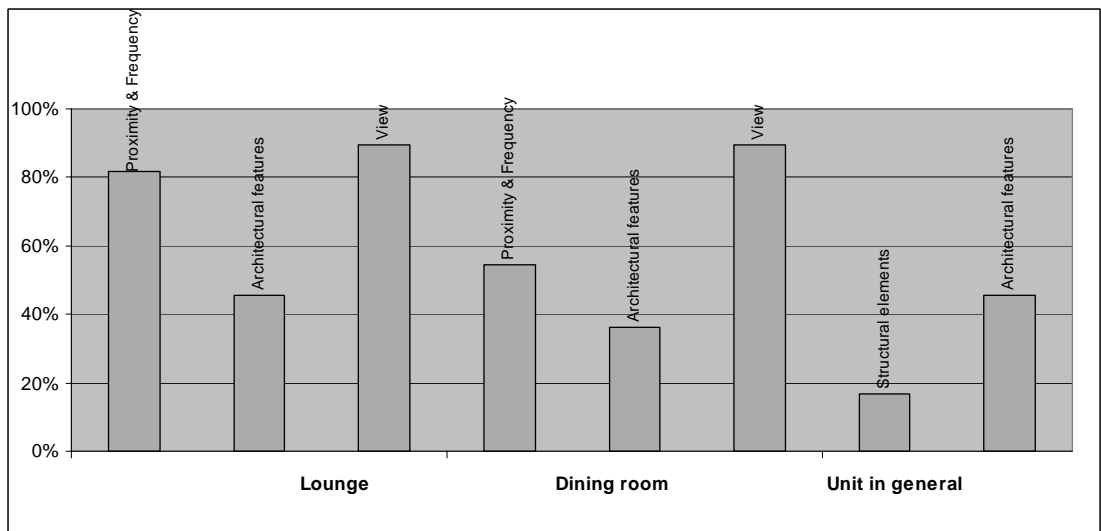
Site R



SLANT analysis results



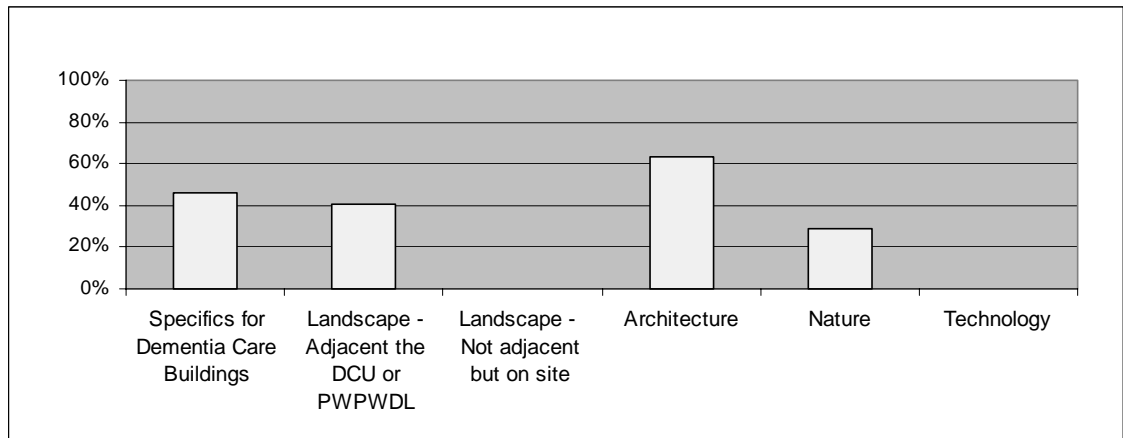
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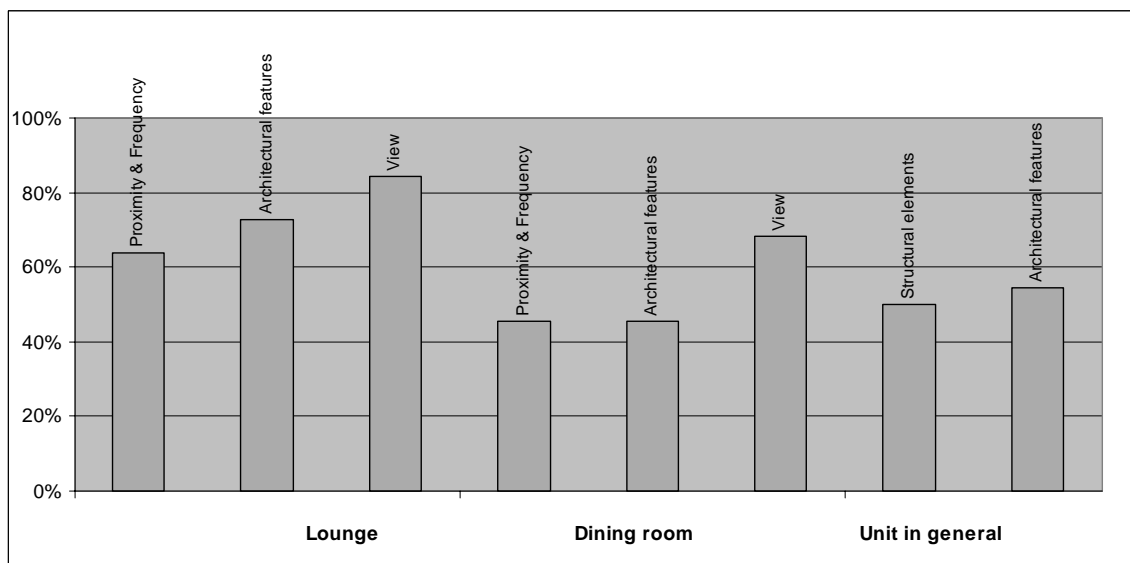
Site C



SLANT analysis results



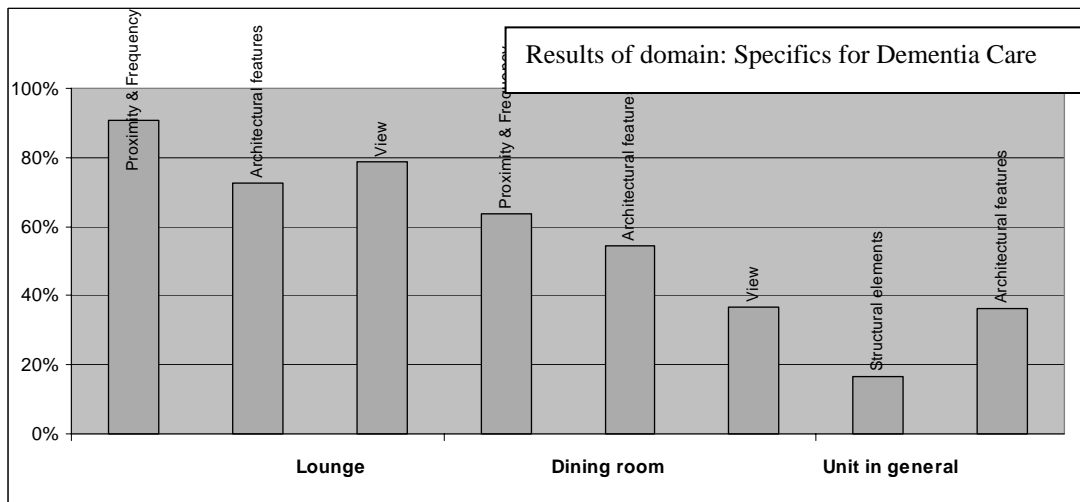
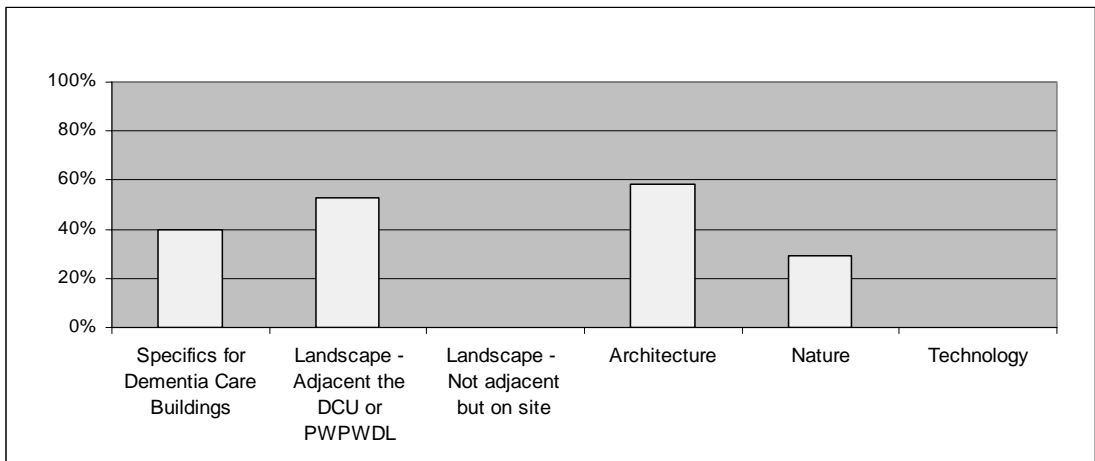
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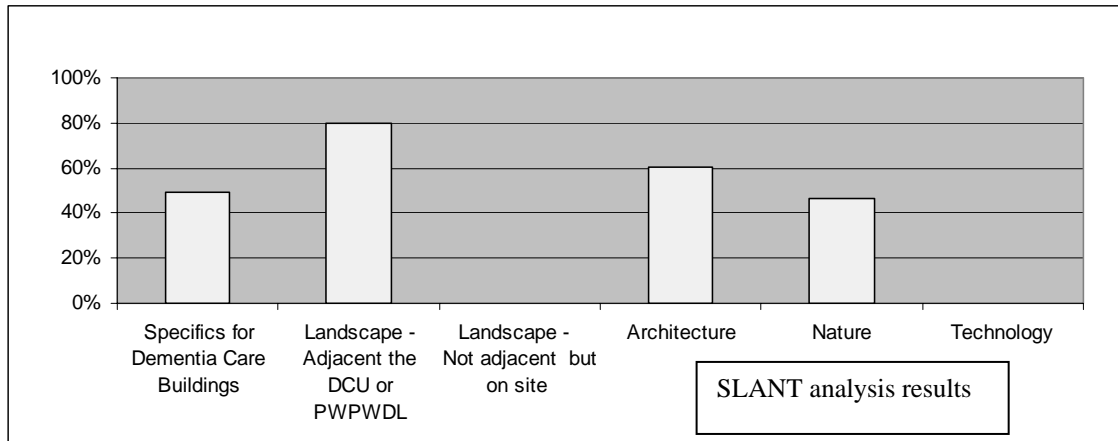
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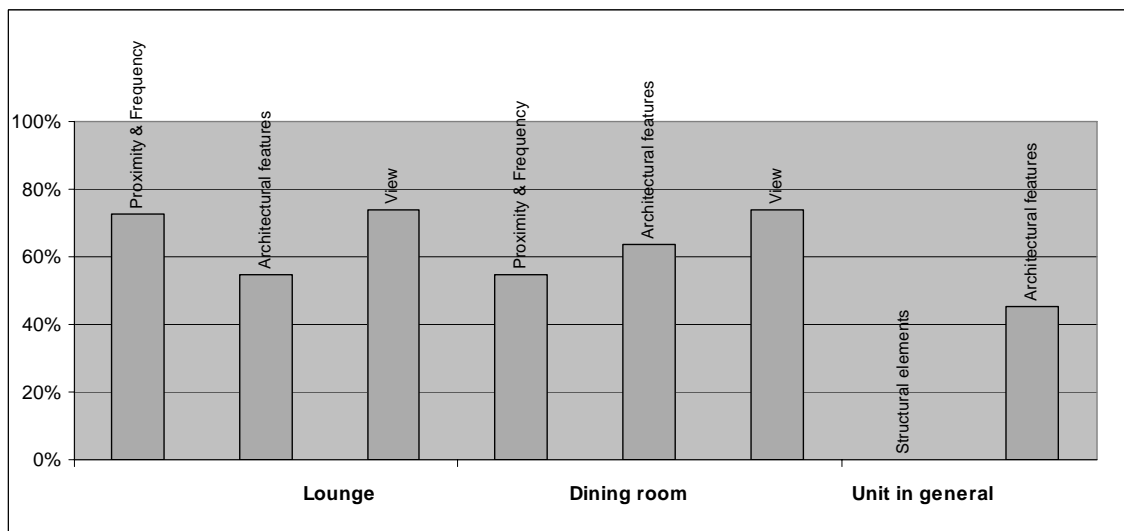
SLANT analysis results



Site F



Results of domain: Specifics for Dementia Care



APPENDIX B

SLANT

Five Domains:

1. **SPECIFICS** - Design Guidance for Dementia Care Environments
2. **LANDSCAPE** – External Edge Spaces and Outdoor Areas
3. **ARCHITECTURE** – Lounge or Dayroom, Dining Room and the DCU overall
4. **NATURE** – Plant and non-plant materials and elemental forces, and an environment that contributes to liveliness attracts birds and wildlife, supports place-making and allows weather, animals and local nature to be experienced.
5. **TECHNOLOGY** - The availability of assistive devices or systems that enable the resident(s) connection to the natural world

1st Domain: **SPECIFICS** (16 sub-domains listed with questions)

1. Building site & neighbourhood

In a residential neighbourhood (either suburban, rural or urban)
Walking distance to shops or post office
PwD can see other houses from their common rooms
Pedestrian traffic can be seen by pwd (community pavement/sidewalk)
Parking hidden from the neighbourhood's view of the building
Looks like normal housing
Front-back / public-private spaces are similar to neighbourhood
Building has style & material of other homes in the neighbourhood
Set-back, height and scale are similar to houses in neighbourhood

2. Spatial characteristics of the DCU or PwPwDL (place where PwD lives)

DCU or PwPwDL is sized for small group of residents 10-12
Is a house, not a unit in a larger facility
Visual access throughout common areas
Minimal corridors
No dead ends
Use of some curved rather than straight corridors
Use of some curved corners
Use of some single rather than double-loaded corridors
Some bedrooms open into spaces rather than corridors
Uninterrupted walking route throughout the home
Public/private gradient between bedrooms and common areas
Uninterrupted walking route through common areas
Small subspaces within larger activity areas
Visual connection to their outdoor area from most used lounge/dayroom
Visual connection to their outdoor area from circulation spaces
Circulation route includes two different doors that are used to go out
Building mass encloses some outdoor area on the same level

3. Small areas

Sitting areas indoors look out on outdoor areas used by residents
Sitting areas indoors are physically adjacent to outdoor areas
A small sitting AREA is available as well as the common lounge
A small sitting ROOM is available as well as the common lounge
A small dining area for 2-3 people is available
Small sitting area in a 'sentry' position overlooks coming and going

4. Special rooms

Family kitchen, eat-in kitchen or dinette for residents & visitors
Pub or café open to residents and guests hairdresser or barber shop
Room or space specifically for activities (reading, snooker, jigsaws, etc)
Function room residents go to off the DCU or away from the PwPwDL

5. Common areas

Size & scale in lounge & dining room is similar to that in private homes
Style & décor in lounge & dining room is similar to that in private homes
There is room for visiting the pwd other than in the lounge or bedroom

6. Entrance to DCU (or place where PwD lives)

Entrance area exists to the DCU or PwPwDL
Entrance feels welcoming (residential materials, style and decor)
Entrance feels non-institutional (residential size and scale)
Freedom of movement of pwd inside the home w/o locks, keypads
Freedom of movement of pwd outside the home w/o locks, keypads
Residents have individual entrances as well as a common door

7. Bedrooms

Choice of single bedrooms
Bedrooms are of different sizes and shapes
Bedrooms are above minimum space standards
Option of double bedroom
Personalised names on doors or personalised doors

8. Kitchen and Dining areas

Domestic, small-scale, residential working kitchen used for daily meals
Eat-in, country kitchen, family style
Autonomous food provision in a non-central kitchen
Kitchen has scope for residents to participate
Dining room space is broken into smaller 'subrooms'
Small tables with seating for four or less
Fittings, cabinets, fridge & counter items look domestic
Dining space in or adjacent a working kitchen

9. Laundry

Laundry provision within DCU or PwPwDL for some laundry to be done
Laundry chores have scope for residents to participate

10. Bathrooms and toilets

Ensuite toilet in most bedrooms
Ensuite toilet is visible from the bed
Toilets clearly marked w/ colour, signs, open curtains, etc
Shared toilets are visible from doorway of common rooms or areas
Toilets/baths have been domesticated with style, fittings and decoration
Toilet outside for residents to use during outdoor activities
Evidence of equipment for assistive toileting
Showering or bathing option is being provided
Evidence of equipment for assistive showering or bathing

11. Staff areas

Staff lounge - Indoor space for relaxation, drinks & meals has windows
Office or workspace for task completion, private consults with GP, etc.
Shared seating space for staff on break & residents
Staff meeting or training room
Outdoor staff seating area available
Smoke-free lounge for non-smoking staff
Space for meds, files, refs & desk but not nurses' station style

12. Furniture and Fittings

Residential style and materials in lounge & dining room
Residential style and materials in bedrooms
Can bring their own furniture
Furniture arranged other than perimeter seating in lounge
Usually more than one chair in the bedroom

13. Lighting (artificial)

More lighting than just the minimum in corridors
More lighting than just the minimum in bedrooms
Downlighting in ensuite bathrooms
Fixtures are domestic rather than institutional in lounge
Fixtures are domestic rather than institutional in bedrooms
Task lighting, table lamps and floor lamps in common rooms
Task lighting, table lamps and floor lamps in bedrooms

14. Daylighting

Roofs allow daylighting from glazing panels or sections
Walls allow daylighting through clerestory windows
Glazed wall or roof sections in common spaces such as lounges
Glazed sections in circulation spaces such as stairwells & corridors
Windows on corridors
Higher than minimum ceilings
Glazed transoms or windows above doors

15. Acoustics

Common rooms & corridors have sound separation and audibility
Common rooms & corridors are calm and quiet
Minimized, unobtrusive control mechanisms (no alarms or buzzers)

16. Wayfinding

Use of colour or redundant cueing for wayfinding

2nd Domain: LANDSCAPE (10 sub-domains listed with questions)

1. Circulation (doorways, access, surfaces, thresholds, handrails, paths and stimuli)

In the DCU or the PWPWDL does an External Edge Space exist like a courtyard, patio, balcony or seating area? (edge space = an outdoor area adjacent the exterior wall within close visual proximity to a common area used by PWD in the home) IF NOT, SKIP TO # 55.

A doorway leads from the DCU to this outside area

A doorway to this outside area is usually open during the day.

Access from indoors is on the level or gently ramped

Walking surfaces are even and non-skid.

Thresholds between indoors and outdoors are minimal or completely flat

Handrails are adequate for a frail person to reach an outdoor seat from the indoor area

Path(s) exist in the outdoor area Path(s) actually go somewhere

Paths and pedestrian routes to and within the area offer a choice of level access or steps

Surface conditions can be seen and pre-viewed by residents from indoors

Stimuli along the path are spaced to maintain the interest of a slow-moving person.

2. Seating and tables

If there is a path, seating is spread out along it so a slow-moving person can stop and rest.

Seating is provided outdoors in a shady place during the summer

Seating is provided adjacent to plantings

Seating is provided outdoors that is visible from inside

There is a choice of sunny or shady spots to sit

Moveable outdoor chairs are provided

Seating is just a few steps from the doorway back inside.

A choice of materials of seats (i.e. metal, wood, plastic...)

Some seating is sturdy and can be used to lean on and steady themselves.

Some seating is close enough to plants for the person to touch and sniff.

Seating is provided facing towards or away from the doorway to the building.

Some seating is in a semi-enclosed space

Seating is sheltered from the wind

Seating configurations allow for individuals to sit comfortably.

Seating configurations allow for pairs of people to sit comfortably.

Seating configurations allow for a group to sit comfortably.

Seating is near a trellis or other structure for climbing plants.
Seating is near to habitat where birds or squirrels can be seen.
Seating is clean and in good repair
Outdoor table is provided
The table is clean and in good repair
Awnings or umbrellas are provided for shade protection
Small tables or ledges to set down a drink or personal belongings on nearby.

3. Proximity and orientation

The location of the outdoor space is NOT on the north side of the building
One room adjacent to the outside area is a staff or common room, assuring residents that staff can be in attendance if necessary
The area is enclosed and secure so residents can spend time their on their own
This outdoor area can be seen from upper floors by people who are allowed to use it
If there is an enclosure fence or wall, there is a view through it to another area

4. Structures and Amenities

If a Wall or fence encloses outdoor space it is topped with climbing and flowering vines
Gazebo (platform with roof) or Arbor (overhead structure) exists
Gazebo or Arbor has seating in it
Greenhouse exists (wood and/or metal and glass enclosed space for gardening & horticultural projects; may be attached to main building or free standing)
Shed exists (protected space for DIY projects out of doors; space for sitting and tinkering, passing the time alone or in conversation)
Summerhouse exists (small structure set away from the building, used in the warmer months with seating and windows)
Clothes Line exists (Linens and towels can smell of the fresh outdoors; activity connects a person to weather patterns, memories, domestic wellbeing)
Food Area - BBQ equipment and eating space exists
Sporting Area - Game courts, shuffle board, bowling green or other such area exists

5. Locale

There are views out of the area towards landmarks such as steeples or tall buildings.
The view is scenic towards a park, field or water body
Sound and motion (passing train, tram, ferry boat) give orientation of time and space.
Sporting or Recreational Area - Game courts, bowling green or playground can be seen
A farm or field with livestock can be seen

Outdoor Area (Sub-domains 1-5 and questions are now repeated as 6-10)

3rd Domain: ARCHITECTURE (13 sub-domains listed with questions)

Lounge or Dayroom:

1. Proximity to natural sensory stimulation (daylight, sunshine & fresh air)

Some of the seats are positioned with a view to a window
Most of the seats are positioned with a view to a window
Sunshine reaches some of the seats
Sunshine reaches most of the seats
Daylight reaches seats near the window
Daylight reaches most of the seats
Daylight reaches all of the seats
At least one seat is near a window that opens
If this is a ground floor, this room has a door to the outside OR....
If this is an upper floor, this room has a door to a balcony, roof garden, etc
Frequency - A door to the outside is opened regularly or frequently
Frequency - Windows in this room are opened regularly or frequently

2. Architectural features - Doors (location, quantity, control & permeability)

Doors (Quantity) - The room has at least one outside door
Doors (Control) - Residents regularly open and close doors
Doors (Permeability) - There is an outside door with a window in it

3. Architectural features - Windows (quantity, juxtaposition, aspect, complexity & panes)

Windows (Quantity) - There are 3 or more separate windows in this room (can adjoin)

Windows (Quantity) - A large picture window or one with multiple panes

Windows (Juxtaposition) - In this room windows are on more than one wall

Windows (Aspect) - There is an east, west or south-facing window in this room

Windows (Complexity) - Open in at least two directions on the same wall

Windows (Panels & Complexity) - This room has a bay window

Panels do not join at eye level to intersect the seated view.

Panels do not join at eye level to intersect the standing view.

4. View (extent & content)

View contains the ground.

View contains the distance.

View contains a variation in topography.

view contains land or grounds within the property lines

view contains land or grounds that are outside the property lines

view includes countryside, rural land or a water body

the view includes people & activities

the view includes landscaped areas or gardens

View includes transportation vehicles on the move

Landscape crews and gardeners can be seen taking care of the grounds.

View includes dogs and pedestrians.

Foliage & tree structure are close enough to afford views of birds and squirrels.

Location near a school affords children walking past.

View changes through the seasons.

View contains the sky.

Windowsills or radiators afford leaning on or setting a cup down.

Seating is positioned so outdoor viewing is possible.

Standing room exists near a window.

Standing room exists with chair, back or windowsill for support.

Dining room:

5. Proximity to natural sensory stimuli (daylight, sunshine & fresh air) (as above)

6. Architectural features - Doors (as above)

7. Architectural features - Windows (as above)

8. View (as above)

DCU:

9. Structural elements (that join indoors / outdoors, afford sensory stimulation and protection.

Score these for the DCU or PwPwDL generally)

Porch exists (USA style, open air or screened in, at the front or back door) with seating

Mudroom or Entrance Porch exists on an outside door of the building

Mudroom or Entrance Porch - holds clothing, footwear or tools.

Balcony or Roof Garden exists with seating

Covered Walkway exists (would connect parts of the building or be adjacent a wall)

Covered Walkway has seating

10. Architectural features - Window sills (width, sun, use & personalisation)

Window Sills - in the DCU are personalised with plants or decorative or domestic items

Window Sills in the DCU are being personalised by the resident(s)

Window Sills in the DCU are wide and sunny enough for growing plants

Window Sills in the DCU are being used for growing plants

11. Architectural features - Windows (control over, frequency of opening)

Windows (Control) - Residents open and close the windows on the DCU

Windows on the DCU are opened daily for fresh air.

12. Architectural features - Glazing (glass enclosed room, conservatory & skylights)

Glazing - on the DCU there is a glass enclosed room or conservatory

Glazing - on the DCU there are skylights or sections of glass ceiling

13. Window (allowable opening, ease of hardware use, net curtains)

Windows are not limited for opening width

Window opener mechanisms are easy for residents to operate.

Use of net curtains is individualized, not done, or not uniformly done

4th Domain: NATURE (8 sub-domains listed with questions)

1. Plant materials – Diversity & Sensory (Score if it is within (or can be seen from within) the outdoor area accessible to residents of the DCU)

DIVERSITY 1 Seasonal bedding plants, annuals or vegetables

DIVERSITY 2 Some large, mature shade trees

DIVERSITY 3 large, mature evergreen or conifer trees

DIVERSITY 4 Some large, mature shrubs

DIVERSITY 5 Flowering shrubs

DIVERSITY 6 Evergreen shrubs

DIVERSITY 7 Groundcover or vines

DIVERSITY 8 Perennials

SENSORY Tactile plants

SENSORY Fragrant plants

2. Plant materials - Habitat (Score if it is available on-site or in the near vicinity)

HABITAT 1 Wild, overgrown shrubs, brush piles & wood piles

HABITAT 2 Berries, soft fruits or nut bushes (raspberries, cherries, etc)

HABITAT 3 Nesting places for birds in trees

HABITAT 4 Nesting places for birds in ivy growing on trees or walls

HABITAT 5 Inland body of water - lake or pond

HABITAT 6 Coast, beach, marsh, bay, fjord

HABITAT 7 River, stream or waterfall

HABITAT - evidence of bird feeding (scraps, suet, nuts or seeds)

HABITAT Structures - there is a nesting box, feeding station or bat box

3. Plants and plant uses indoors - cut, live, artificial & uses

Specific to the DCU

Cut Flowers are present in the DCU

Live Plants are present in the DCU

Indoor plants are watered, generally thriving and not neglected

Silk and artificial flowers or plants are found in the DCU

USE - Plants grown on site are used in the DCU for eating or cooking...

USE -or for decorating, crafts or cut flowers

4. Structure and Provision (with plant and non-plant materials)

Wall, fence, water feature, sculpture, & hanging baskets

STRUCTURES - A Wall or Fence is colonised with creepers or moss

STRUCTURES Wall or fence provides a protected and warm place to sit

Water feature (built) pond, waterfall, fountain or birdbath

There is Garden Sculpture, Artwork or Signage that residents helped create

Hanging baskets and plants pots are present and being used

5. Structure and Provision (with plant and non-plant materials)

Window boxes, vertical structure, materials & tools

Window boxes present and being used

Plants in pots or baskets are thriving and generally not neglected

SHELTER - A vertical structure (trellis or screen) is used to create a sheltered space and/or to grow plants

Garden Materials (compost, soil, plants) are available to residents

Garden tools are available to resident of the DCU

6. The Elements

Rain, snow, or leaves blowing can be seen on the ground outside the window of the DCU

7. Domestic animals - cats, birds & dogs, living or visiting

Cats live on the DCU

Birds are living in cages on the DCU

Dogs visit the residents on the DCU

8. Local Nature – Proximity to wildness or farm ecosystems

ECOSYSTEMS - A natural environment (pond, field, river, woodlands, etc.) is visible

ECOSYSTEMS - A farm or natural area is near enough to visit on a day trip

5th Domain: TECHNOLOGY (6 sub-domains listed with questions)

1. Freedom of movement between indoors and out

Monitoring device worn by the resident allows unrestricted outdoor access

Sensors on exterior doors alert care staff that a door is open, allowing resident safe and unrestricted outdoor access and freedom to come and go.

Automatic door opener allows easier access for frail or disabled residents

2. Going off site

Global positioning system (gps) technology (for instance on a mobile phone) allows unrestricted access to the outdoors or neighbourhood

3. Fresh air access

Automatic window or curtain controllers allow connection to outdoors for frail or disabled residents

Passive sensors on windows alert carers through their computer monitor that a window is open, eliminating the need to restricted window openings

4. Safety & security of outdoor areas

Secure outdoor area - passive alarm at property line allows the resident freedom of movement around the grounds and protects from intruders

CCTV in outdoor areas allows residents freedom to be outside and provides security information to staff

Night-lighting enhances safety of evening trips to the outdoor areas

5. Enticement

Night-lighting allows views of the garden from indoors at night

Pumps for water circulation, fountains and waterfalls enhance outdoor areas by the addition of water features

Use of assistive devices for gardening and access to garden areas

Heights of hanging planters or baskets are mechanically adjustable

Special hand tools enable frail or physically disabled residents to garden

Special equipment for sitting or bending to enable access to the garden

Equipment available for sensory disability, for instance Braille signage outdoors

Wheelchair with grass-friendly tires for lawn travel

6. Communication & Entertainment

Web-cam or internet based system allows residents to 'visit' areas outside or in the community from a computer screen in the home

Multi-sensory environment such as Snoezelen Room

APPENDIX C – Review - Sensory Stimulation Activities And Environmental Interventions

Table 1. **SENSORY STIMULATION - INTERVENTION STUDIES – ACTIVITIES (administering of treatment directly to the person)** (Page 1 of 2)

Year & Author	Study	Persons	Research design	Stimulation
(Baker et al., 2001)	Short term effects on behaviour, mood, cognition with Snoezelen & Activity	50, moderate to severe dementia, day hospital	randomized controlled MSS or Activity group 8 30min sessions in 4wks	(MSS) all senses but taste, unpatterned, non sequential stimuli. (Activity) no intentional MSS experience, patterned, sequential, puzzle, game
	RESULTS – Immediately after sessions patients talked more spontaneously, relating to people better, paying more attention to and focused on the environment, had more initiative, enjoyed themselves, were more active or alert, less bored/inactive. REMARKS - Amount and initiation of speech improved only in the activity group, cognitive scores remained stable in both groups; that the MSS group improved at home in mood and behaviour as rated by carers, was an important benefit. After effects: behaviour deteriorated after sessions ceased, gains were quickly lost. No firm conclusions could be drawn.			
(Ballard et al., 2002)	Effect of <i>Melissa</i> (lemon Balm) essential oil on agitated behaviour	72 persons in NHS continuing care with clinically significant agitation and severe dementia	placebo controlled double blind <i>Melissa</i> oil or sunflower oil as placebo 10% by weight applied twice daily	arms and face applied with prepared herbal lotion; absorption through the skin and by inhalation
	RESULTS – 71 persons completed the study with no significant side effects. 60% of active treatment group and 14% of placebo experienced a 30% reduction of Cohen-Mansfield Agitation Inventory (CMAI) score, with an overall improvement in agitation of 35% in patients receiving <i>Melissa officinalis</i> and 11% with placebo. “Restlessness and shouting were the domains with the greatest improvement” (p. 556).			
(Holmes et al., 2002)	Effects of lavender oil on agitated behaviour in severe dementia	15 persons with ICD-10 diagnosis in a long-stay psychogeriatric ward	placebo controlled double blind controlled crossover for 10 days with blinded observer rater	application of 2% lavender oil aromatherapy stream for 2 hours every other day alternated with a placebo
	RESULTS – Significant improvement in agitation. 9 patients showed an improvement, 5 showed no effect and 1 showed a worsening of agitated behaviour. This treatment administered in an aroma stream showed “modest efficacy in the treatment of agitated behaviour in patients with severe dementia” (p. 305).			
(Kragt et al., 1997)	Effects of Snoezelen Room on persons with dementia	17 persons in advanced stages of dementia	controlled cross-over study; used behavioural observation scale GIP	Snoezelen room - full array of multisensory stimulation
	RESULTS – Less behavioural problems were seen with the experimental intervention; a higher degree of wellbeing in the sessions than out in the living room. (This study was carried out in Amsterdam and reported in Dutch but was included in translation because of the paucity of MSS studies available.)			

Table 1. **SENSORY STIMULATION - INTERVENTION STUDIES – ACTIVITIES (administering of treatment directly to the person)** (Page 2 of 2)

Year & Author	Study	Persons	Research design	Stimulation
(MacDonald, 2002)	Preventative effects of MSS as intervention for challenging behaviours	11 patients with challenging behaviours	12 week program to compare baseline/ no intervention, one to one activities, and MSS; sessions daily for 30 minutes	Multi sensory stimulation in specially equipped room
	RESULTS – 2 residents showed “marked and consistent reduction in frequency and duration of challenging behaviours” during sessions. Most other residents “displayed a slight improvement in their target behaviours during multisensory stimulation, but not in comparison with activities.” Staff and residents enjoyed the sessions.			
(Moffat et al., 1993)	Effects of Snoezelen Room on persons with dementia	6 day hospital patients 6 from continuing care ward	rating of behaviour before and after 10 min. sessions; 3 times a week for 4 weeks	projected images, music, aroma diffuser, bubble making, fibre optics, vibrating cushion, mirror wall, spotlight, bubble tube and mirrors. Staff engagement with patients.
	RESULTS – Increase in the ratings of “happy and interest” and a reduction in sadness and fear; increase in the number who remained calm; no generalized effect to other aspects of the mood and behaviour. No improvement in the stress of the relatives. General motivator for staff.			
(Paire & Karney, 1984)	Effectiveness of sensory stimulation on elderly psychiatric patients	27 psychiatric residents	12 wks treatment, 6 wks of follow up 3 groups: sensory stimulation, staff attention and routine care	multisensory stimulation
	RESULTS – 27 subjects completed. Those that completed the sensory stimulation improved and maintained their improvement in the areas of personal hygiene and interest in group activities relative to the subjects in the other two treatment approaches.			
(Remington, 2002)	Effect of calming music and hand massage on agitated behaviour	68 persons in long-term care, mild, moderate or severe dementia	Randomized controlled 4 groups, 10 mins, 4 repeated times No difference in agitation at baseline	4 groups received either calming music (CM), hand massage (HM), both simultaneously (CM and HM), or neither treatment (control)
	RESULTS – A significant difference in level of agitation over time was found among the 4 intervention groups; fewer agitated behaviours with CM or HM. No significant differences in reduction of behaviours over time. Mean agitation scores for control group over treatment groups were significantly greater over time. Verbal agitation was not significantly influenced over time by any of the interventions. Hand massage consistently reduced verbally agitated behaviours more than any other treatment.			
(Smallwood et al., 2001)	Effects of aromatherapy massage, and conversation on behavioural disturbances	21 persons with severe dementia	randomized controlled, single blind aromatherapy & massage, aromatherapy & conversation, massage only	massage, aromatherapy and conversation
	RESULTS – Significant improvement in motor behaviour. Behavioural disturbances were reduced with combination of aromatherapy and massage by as much as 34%. Study provides “preliminary evidence of a measurable sedative effect of aromatherapy massage on dementia with a robust scientific paradigm” (p. 1010).			

Table 2. **SENSORY STIMULATION - INTERVENTION STUDIES – ENVIRONMENTAL (modification of the place the person inhabits)** (Pg 1 of 2)

Year & Author	Study	Persons	Research design	Stimulation
(Bellelli et al., 1998)	8 SCUs, multicenter study focused on staff and environment changes	55 persons, moderate to severe dementia, severe behavioural disturbances,	care program focused on modifying environment to reduce negative stimuli and improve behaviour	high auditory stimuli and fast staff movements identified as negative. Removed obstacles for wandering, neutralized wall colours, soundproofed boards. Trained abnormal motor activity nursing staff to reduce excessive noise and scurrying.
<p>RESULTS – Behavioural disturbances decreased over 6 month follow-up after admission to the SCUs as did the use of psychoactive drugs and physical restraints. “All mean scores showed a decrease...except for disinhibition, which increased on the first follow-up and decreased on the second. The reduction in symptoms was progressive and significant for agitation, anxiety, and abnormal motor output” (p. 459-60).</p>				
(Cleary et al., 1988)	Reduced Stimulation Unit to modify behaviour and improve patient/staff interaction	11 persons who were disoriented with respect to time and place and who wandered and were agitated	Pretest-posttest design with multiple measures including weight, medications, restraints and functional abilities 16 bed, 8 room area was redesigned	Reduced levels of stimulation (bustle of activity, visual and auditory stimuli, presence of other people/strangers) as well as an increase in positive stimulation (eye contact, touch, better patient/staff ratio, fewer corrective interactions)
<p>RESULT - Patients improved on the SCU including weight gains, decreased agitation and restraint use, wandering was less of a concern, activities were more enjoyed. More interaction between the patients themselves (which wasn't happening prior to the move) and between patients and staff. Family and staff were more satisfied than before.</p>				
(Cohen-Mansfield & Werner, 1998)	Effect of enhanced environment on nursing home residents who pace	27 residents who pace and wander, 29 staff members, and 23 relatives	Add a home environment and an outdoor nature environment; then measure location in the ward, pacing, wandering, agitation and confusion	Visual, olfactory and audible stimuli were made available to the residents. They were free to choose to enter and engage the spaces and to sit on the benches.
<p>RESULTS – Participants spent more time in the enhanced environments and used the benches. There was a trend toward less trespassing, exit-seeking, and other agitated behaviour; residents found it more pleasurable. Positive impact on mood and behaviour of those who pace. Staff and family preferred the enhanced environment as well.</p>				
(Jones, 1988)	Nursing staff morale in a high stimulation setting	13 staff in the traditional unit and 16 in the enhanced unit	Cross-sectional survey of two groups of nurses in two different psychiatry units	high stimulation environment has a sociopetal furniture arrangement, orientation aids (mirrors, clocks, signposts) recreation materials, and reality orientation programs
<p>RESULTS – Morale was higher among nursing staff in the high stimulation environment compared with staff in the traditional ward.</p>				

Table 2. **SENSORY STIMULATION - INTERVENTION STUDIES – ENVIRONMENTAL (modification of the place the person inhabits)** (Pg 2 of 2)

Year & Author	Study	Persons	Research design	Stimulation
(Lawton et al., 1998)	Stimulation-Retreat model to diagnose, prescribe and apply additional or reduced stimulation	49 residents in experimental and 48 in control group with dementia at a nursing home	Staffing and program changes to create a package of care measured at baseline, 6 months and 12 months. Effects were predicted based on known effects of over or under stimulation.	Additional stimulation or relief from stimulation was applied for each person as their diagnosis recommended.

RESULTS – Most functions worsened including negative attributes and effects. Lesser decline in positive affect and increase in external engagement. Marginally effective.

(Namazi Y Johnson, 1992)	Reducing overstimulation of residents by hanging cloth partitions to shield from noise and talking	12 residents in SCU	cloth barriers create activity areas by eliminating views to ongoing activity areas. This reduces the visual and auditory distractions nearby	Increased stimulation of food and drink and all things close by: barriers both increased sensory importance of the nearby and diminished the sensory importance of sights and sounds on the opposite side of the barrier
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RESULTS – Use of partitions increased the ability among residents in all stages of dementia to eliminate views to ongoing activity and to increase attention to task at hand.

(Swanson et al., 1993)	Structured resident routines and reduced stimulation effects on catastrophic	13 residents on SCU 9 residents in long-term care	Quasi-experiment of environmental comparison between two different types of care settings	Reduced stimulation by separating residents with varying degrees of dementia, reduced negative interactions by designing for safe wandering behaviour
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RESULT – Reduced catastrophic reactions and more spontaneous reactions occurred with the residents on the reduced stimulation unit. Wandering was not affected.

SENSORY STIMULATION - OBSERVATIONAL STUDY – ENVIRONMENTAL

Year & Author	Study	Persons	Research design	Stimulation
(Nelson, 1995)	Qualitative study of person-environment (P-E) interactions as antecedents to disruptive behaviour in day room and common area	residents of a 59-bed unit with varying degrees of cognitive impairment whose stress thresholds have been lowered as a result	Observation of disruptive incidents are recorded, analysed and linked to existing P-E theory. Recommendations are made for minimising negative stimulation and reducing disruptive behaviours.	Other persons (shouting, fighting, loud talking, movement) Inanimate (furnishings, fixtures, TV, PA system, mobility devices, loud noises) Self in terms of bodily and emotional needs; hunger, thirst, elimination needs, temperature, etc.

RESULTS – Identification of possible environmental stressors on a nursing home unit for cognitively impaired residents, and correlation with P-E theories.

Table 3. **FRAMEWORK for ANALYSIS: INTENTION - ENGAGEMENT - PLACE**

(Pg 1 of 2)

Sensory Stimulation	Intention	Engagement/relationships	Place specific or non-place specific
Snoezelen Room			
(Baker et al., 2001) (Moffat et al., 1993)	Improvements in themselves of cognition, mood, and behaviour. Increase of positive stimuli and Decrease of negative stimuli.	One or more other persons, modified environment, inanimate objects	Visual, auditory, tactile, olfactory stimulation. One-on-one, non-directive, enabling approach. Non-sequential & unpatterned activities. Room specially designed but not a place-specific environment.
Calming Music and Hand Massage			
(Remington, 2002)	Modify environmental stimuli to reduce agitation	Massage was 5 minutes each hand (did not say who administered it) Music was New Age version of <i>Pachelbel's Canon in D</i> played on CD Nature through herbal preparations.	Patient's room or familiar lounge area. The position of the patient is not specified but a seated position is the assumption. Non-place specific. Patient assumes a passive role, receives treatment.
Aromatherapy			
(Ballard et al., 2002) (Holmes et al., 2002) (Smallwood et al., 2001)	Reduce agitation, modify behaviour. Terpenes within essential oil are absorbed through the lungs into the blood stream.	With self through the memories that the smell triggers; with the Caregiver applying the treatment for 1-2 minutes, and with nature through the herbals.	Setting is any familiar room. Non-place specific activity.
Modified environment			
(Bellelli et al., 1998)	Reduce negative stimuli, auditory and visual, to decrease press and improve behaviour	Increased staffing improves relationship with patients; lowered environmental press improves	Place-specific changes to environment create a change that is constant rather than interventional
(Cleary et al., 1988)	RSU specially designed to reduce stimulation with the intended affect of reducing wandering, agitation and negative verbal feedback	With staff, family and visitors (more 'positive and caring', eye contact, touch) with physical setting (free to wander, less noise) with body (could eat and rest as needed) patients' relationship with place	Place-specific; changes to physical surroundings, reduced scale, more freedom of movement with clearer boundaries, less environmental press from TV and phone, reconfiguration of beds, rooms and tables.

Table 3. **FRAMEWORK for ANALYSIS: INTENTION - ENGAGEMENT - PLACE**

<u>Sensory Stimulation</u>	<u>Intention</u>	<u>Engagement/relationships</u>	<u>Place specific or non-place specific</u>
(Cohen-Mansfield & Werner, 1998)	Affect behaviour and mood and reduce pacing and wandering by adding two stimulating environments	With the physical settings (by choosing to spend time in them) with nature (in the outdoor setting) with other people (the enhanced places were used for visiting) and with self (go to be alone)	Place-specific intervention; modifications to built space with actual new places created within the context of the existing architecture; new places had distinct character, presence, were destinations; new places offered opportunities for choice.
(Jones, 1988)	Increase sensory stimulation in the environment to improve readability and orientation for residents	With built structures and furnishings, with self through reality orientation, with staff and inanimate objects	Place-specific: modifications increase participation of residents with the place itself, moving around it, using it, enjoying it
(Lawton et al., 1998)	Staff and programming changes to improve stimulation delivery; how much to give or remove depending on diagnosis and prescription	with other residents and staff, with the environment, with themselves	Non-place specific; staffing and programming changes would adjust interventions for each resident design individually; not interventions to the built structure which would have had a global affect instead.
(Namazi & Johnson, 1992)	Limit residents' visual and auditory distractions with cloth barriers to increase ability to focus on a task or activity	limiting visual and auditory stimulation affects residents' relationships with each other, with tasks and items at hand, and with staff members	Place-specific intervention; modifications very purpose built
(Swanson, Maas, & Buckwalter, 1993)	Reduced stimulation unit intended to reduce catastrophic reactions and wandering; to enable more spontaneous reactions between the residents	with staff and other residents, with surroundings and furniture	Place-specific; altering physical setting to discourage wandering and catastrophic behaviour, to encourage involvement in activities
Environmental observation			
(Nelson, 1995)	Observation of person-environment interactions during disruptive behaviour to understand the role of environmental stimuli in incidents	With others (fighting, perceived threats to personal freedom and unmet basic needs), with self (hallucinations and disinhibition), and with inanimate objects (excessive environmental stimuli, TV)	Place-specific and non-place-specific stimuli need altering to reduce the environmental press and over-stimulation that results in disruptive behaviours.