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### The Therapeutic Benefits of Salutogenic Hospital Design



Picture 2. Colour, and form as landmark to facilitate orientation. Designed by BMJ Architects Glasgow-Scotland

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Architecture and design have been influenced by industrial societies for decades, and as a result, public buildings such as airports and hospitals have often been designed to function and look like factories. Clinical practice in hospitals focuses mainly on treating illness while often neglecting a patient's psychological, social and spiritual needs. Environmental qualities that could be considered as psychosocially supportive have not been developed properly. Psychosocially supportive design stimulates and engages people, both mentally and socially, and supports an individual's sense of coherence. The basic function of psychosocially supportive design is to start a mental process by attracting human attention, which may reduce anxiety and promote positive psychological emotions. Health processes could be strengthened and promoted by implementing design that is Salutogenic i.e. that focuses on the factors that keep us well, rather than those that make us unwell. The aim of Salutogenic Design is to create an environment that stimulates the mind in order to create pleasure, creativity, satisfaction and enjoyment. There is an important relationship between an individual's health and the characteristics of the physical environment.

### Perspectives on Health

The holistic viewpoint emphasises multiple dimensions of health, including the physical, psychological, emotional, spiritual and social (Nordenfelt, 1991). From a research perspective, health can be divided into a pathogenic and salutogenic starting point. Pathogenic research focuses on explaining why certain etiological factors cause disease and how they are developed in the physiological organism (Antonovsky, 1979). The primary aim of pathogenic research is often to find medical treatments. Salutogenic research is based on identifying wellness factors that maintain and promote health, rather than investigating factors that cause disease (Antonovsky, 1991). Together, the salutogenic and the pathogenic approach offer a deeper knowledge and understanding of health and disease. To be able to answer the salutogenic question – what is causing and maintaining healthy people? – Antonovsky (1991) developed the concept of a Sense of Coherence (SOC). It maintains that a person with a high sense of coherence chooses the most appropriate coping strategy in a stressful situation. For example, the person may decide to fight, flee or be quiet depending on what kind of stressor the individual is exposed to. Research has shown that it is possible to measure a person's sense of coherence and thereby predict an individual's health (Suominen, Helenius, Blomberg, Uutela & Koskenvuo, 2001).

The concept of sense of coherence has three vital components: (1) comprehensibility, (2) manageability and (3) meaningfulness (Antonovsky, 1991). A person with a strong sense of coherence scores high on all three components. According to Antonovsky, the term comprehensibility implies that the individual perceives the surrounding environment and what is happening in the world as coherent. If something unexpected is happening, such as an accident or personal failure, the person who understands why they are happening has a higher sense of coherence than one who cannot. A person with a low sense of coherence perceives themselves as unlucky.

Manageability means that the individual has all the required resources necessary to cope with a given challenge or demand. This means that the individual feels that they are influencing what is happening around them and does not perceive themselves as a victim of circumstance. Antonovsky (1991), believes that a person's sense of meaningfulness is connected to his or her perception that there are important and meaningful phenomena in life. Meaningfulness is the component that motivates a person's sense of coherence.

### The Impact of Built Environment on Health and Wellbeing

There is an interaction between human health and the built environment. The physical environment is not only vital for good health, but can also be a critical stressor for the individual (Dilani, 2006). Physical elements in an organisation can contribute to stress and are therefore essential factors for increasing comfort (Dilani, 2001). Despite that, the majority of humans in the western world spend most of their time in indoor environments; there is a lack of knowledge about how these environments affect a person's health and wellbeing. There is a general belief that humans always adapt to the environment. Often called the theory of adaptation, this belief indicates that people become less conscious of the environment the longer they reside or work in that given environment (Carnvale, 1992). A general belief is that if one lets oneself be affected by the physical surroundings then it is a sign of weakness.

In order to create supportive physical environments it is crucial to understand an individual's fundamental needs (Heerwagen et al., 1995). It is also necessary for different professional disciplines to willingly cooperate in creating the best conditions for humans (Heerwagen et al, 1995; Lawrence, 2002). Before a zoo is built, it is common practice for architects, designers, biologists, landscape architects, animal psychologists and building specialists to collaborate in creating an environment that optimizes the living conditions for the animals (Heerwagen et al., 1995). Factors

such as materials, vegetation and lighting are taken into consideration; animals need enough space to eat, sleep and decide when to be social or seek solitude, and even their need for control and choice have been noticed. The aim is to create an environment that will support the animal's physical, psychological and social wellbeing. Ironically, humans do not seem to make the same demands when a workplace is going to be designed.

Heerwagen et al. (1995), created a framework and guidelines for a salutogenic design, which highlighted the following factors:

- Social cohesion, both formal and informal meeting points;
- Personal control for regulating lighting, daylight, sound, temperature, and access to private rooms; and
- Restoration and relaxation with quiet rooms, soft lighting, access to nature and a good view.

Already during the nineteenth century, Florence Nightingale developed a theory of health care, which emphasised that physical elements are vital for an individual's health (SHSTF, 1989). Noise, lighting and daylight were, for example, considered as vital factors for affecting a person's mood.

During the 20th century, different researchers developed stress models that illustrate how the physical environment may affect human health and wellbeing (Levi, 1972; Kagan & Levi, 1975; Dilani, 2001; Dilani, 2006b). Levi (1972) founded the stress theory, which was later developed by Kagan and Levi (1975). The model describes how the physical environment is the foundation on which the societal organisation, structure and function is built and, in the long run, is critical to the promotion of health or disease (Dilani, 2001). The model is based on a system that points to a deeper understanding between the physical environment and different human components (Kalimo, 2005). The model is used within the field of architecture to integrate design elements with health and wellbeing.

## Nature and its Meaning for Health

Most people have some kind of relationship to nature and there are many people who greatly value diverse natural environments. There are also many people who want to get away from everyday life, during weekends and holidays, and regain their strength in relaxing and natural recreational areas. What is it that makes people feel at ease in nature? Does the natural environment affect people in different ways? Is it possible to draw any general conclusions about nature's influence on the human being? The restorative environment should be inviting and well balanced with an aesthetic beauty that allows people to reflect (Herzog, et al. 2003). Nature offers various colours, forms and scents, which can encourage humans to forget about their everyday life (Kaplan & Kaplan, 1989; Kaplan, 1995; Herzog et al, 2003). Natural environments often offer an atmosphere where the individual's needs for harmony and compatibility are met. It is therefore very important that natural environments are accessible at the workplace. Kaplan and Kaplan have developed the Attentional Restorative Theory (ART), which identifies two attention systems – direct and indirect attention – and how they are related. Indirect attention does not demand any energy or effort from the person and it is activated when something exciting suddenly happens or when one does not have to focus on something in particular. Direct attention is activated as soon as a person needs to concentrate and focus on a task and simultaneously block other disturbing stimuli. After an intense period of direct attention, a person is in need of restoration; otherwise she will easily become mentally exhausted. People who have been using their direct attention without resting often become impatient and irritated and it has been shown that a mentally exhausted person often commits so called "human errors" (ibid). A person who does not have the capacity to concentrate often becomes thoughtless, less cooperative and less competent. Therefore, in order to work efficiently, it is vital to have a well-functioning attention system and find time for restoration. The Attentional Restorative Theory (ART) has been tested and confirmed by different researchers (Herzog et al, 2003; Tennesen and Cimprich, 1995). One of the studies (Herzog et al., 2003) showed that three of the four components: Being away; extent; and compatibility, are seen as measurable indicators of how to create a restorative environment. Several studies have also confirmed that human beings perceive natural environments as more restorative than urban environments (Van den Berg, Hartig and Staats, 2007). Therefore, when human beings are tired and mentally exhausted, nature is the appropriate place for restoration. Other studies have shown that viewing nature through a window has positive health outcomes (Moore, 1981- 1982; Ulrich, 1984; Leather, Beale and Lawrence, 1998; Frumkin, 2001).

## Daylight, Sunlight, Windows and Lighting's Effect on Health

There is a great deal of research on daylight's positive effects on humans' psychological wellbeing (Evans, 2003). A lack of daylight can lead to both physiological and psychological difficulties (Janssen & Laike, 2006). Another researcher studied a correctional institution in Michigan and the results proved that inmates who had their windows facing the prison yard were visiting the healthcare facility more often than inmates who had windows facing the forest and farming fields (Moore, 1981-1982). Ulrich & Lundén (1984) showed that hospital patients who were staying in rooms with windows viewing nature were rehabilitated faster than patients who viewed a brick wall. Research has also shown that daylight in a classroom is necessary for the pupils to maintain a balanced hormone level (Küller & Lindsten, 1992).

Windows can also have positive health outcomes on patients (Verderber, 1986; Lawson, 2001). For example, the window can contribute to improved health by allowing fresh air and daylight to enter, by providing a view and a link to the outer world, thus satisfying a patient's or prisoner's need to view the seasonal variations (Verderber, 1986; Lawson, 2001). Another study showed that exposure to direct sunlight via windows in a workplace increased the workers' well being and had a positive impact on their attitudes and job satisfaction (Leather et al., 1998).

Rooms without a window can affect human health and wellbeing negatively (Janssen & Laike, 2006; Küller & Lindsten, 1992; Verderber, 1986). One of the studies showed that blue collar workers who worked in rooms without windows experienced more tension and were more negative towards their physical working conditions than workers who had offices with windows (Heerwagen & Orians, 1986). Patients who are staying in rooms without windows can develop sensory deprivation and depressive reactions and exacerbate perception, cognition and attention (Verderber, 1986).

Since daylight positively impacts human physiology, it should be considered rather than artificial daylight which claims to have the same affect. According to some research, artificial daylight can positively affect peoples' cortisol levels and perhaps contribute to fewer sick days (Küller and Lindsten, 1992). Lack and Wright (1993) showed that exposure to lighting at certain times during a 24-hour period can prolong sleep and improve the quality of sleep. Energy consumption and costs can decrease if the individual has the ability to control the lighting levels, which also has positive effects on environmental resources (Moore, Carter and Slater, 2004). Furthermore, an individual's general satisfaction was higher when they had the ability to control the lighting levels themselves. Küller's (2002) conclusion suggests that lighting will become more important in the future, especially since it is becoming more common to have buildings without windows that have no access to daylight.

## Art, Healing and Well-Being

According to art historians, humans live today in a more aesthetic world, where art, fashion and design offer countless aesthetic experiences (Leder, Belke, Oeberst and Augustin, 20004). When a person observes and appreciates different visual scenes, such as a piece of art, complex cognitive and emotional processes arise (Keith, 2001). In order to understand the meaning of a painting it is important to understand its different parts before it is possible to understand the whole. During the observation of a painting and in the process of understanding it, a person can for example experience joy, participation, discomfort or interest. These emotional and cognitive responses are called aesthetic experiences and often lead to positive, satisfying and rewarding experiences for the viewer (Leder et al., 2004).

Art therapy (music, dance, painting and drama therapy) has a unique potential to reach patients with psychosomatic diseases, who are otherwise difficult to reach with traditional therapeutic methods (Theorell & Konarski, 1998). For example, Argyle (2003) showed how a group of people, identified as being in the risk zone for mental disease, participated in different art projects and improved their social and mental wellbeing. The participants testified that the project had strengthened their self-esteem and given them a sense of belonging to a social group. This health promoting art project is considered to be cost effective. Gardner (1994) also maintains that participation in different art processes can give the individual the tools to express feelings and experiences in a way that is nonverbal.

## The Physical Environment and Productivity

When an organisation's management wants to increase productivity they often focus on employee competence and personal motivation rather than the physical environment and design (Heerwagen et al., 1995). Increased knowledge and consciousness about the relationship between improved health and increased profitability would affect how designers, architects and managers design, build and maintain buildings (Fisk, 2000). For instance, improved indoor climate can improve employee health, decrease the amount of sick days, reduce healthcare needs and increase productivity, which in turn strengthens the human capital and leads to higher company profitability. Ergonomic improvement for employees has also been proven to increase a company's profitability. For example, IBM invested 186,000 dollars in ergonomic education and implemented extended ergonomic changes, whereby they changed the design of the workplace and various working tools (Helander & Burris, 1995). The improvements contributed to better working positions, improved lighting, lower noise levels and better support with heavy work routines. The project decreased sick days by 19 percent, which generated an annual profit of 68,000 dollars. In addition, the changes contributed to higher productivity and improved quality, which led to an annual profit of 7,400,000 dollars. In other words, investments and changes within the physical environment led to profits through an increase in health conditions and productivity.

## Conclusion

The research has shown that the salutogenic perspective forms a theoretical framework for psychosocial supportive design, since it can stimulate, engage and improve an individual's sense of coherence and thereby strengthen their coping strategies and promote health. To implement psychosocially supportive design it is necessary that the whole organisation understands the meaning of a salutogenic perspective. Knowledge of which environment factors contribute to health and wellbeing can thereafter be guidelines in making political decisions.

In the process of making decisions it is important to have an interdisciplinary perspective where different individuals with different backgrounds and knowledge work together in this field – people such as psychologists, architects, landscape architects, doctors, behavioural scientists and health promoters. Fortunately it is becoming more common to use an interdisciplinary perspective as a central strategy (Barry, 2007). For example, the Internet technology sector recruits sociologists, anthropologists and psychologists who can study and explain how a product will be used in different cultural contexts. The application of an interdisciplinary approach to work may challenge existing ways of thinking and may also make research and innovation more democratic and receptive to public input.

Decision makers should take the following factors into consideration during the process of building a hospital: Good lighting; positive interior distractions; and access to daylight, nature, art, symbolic and spiritual objects. Other important factors to take into consideration are the individual's need for control over lighting, noise, indoor temperature and the possibility of choosing when to seek social interaction or solitude. It is also important to create attractive and inviting spaces that promote social interaction and social support as well as creating spaces for restoration and private conversations. In order to motivate people to change their lifestyle it is necessary to offer them activities that strengthen their self-esteem and self-efficacy.

In summary, this study has shed light on factors in the physical environment that can promote health, well-being and increase productivity and profitability. Secondly, we encourage decision makers to implement salutogenic design that in turn promotes health and wellbeing.

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