

**EMBRACING EASTERN AND WESTERN PRINCIPLES: TOWARDS  
AN INTERCULTURAL OFFICE DESIGN FRAMEWORK**

by

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*“People ignore design that ignores people.”*  
Frank Chimero

**Vir Léon**

## **ABSTRACT (WITH KEYWORDS)**

### **EMBRACING EASTERN AND WESTERN PRINCIPLES: TOWARDS AN INTERCULTURAL OFFICE DESIGN FRAMEWORK**

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## **EXECUTIVE SUMMARY**

An employed individual will spend between a quarter and a third of his or her waking life at the workplace. An estimated 40% of those in South Africa who are employed full-time work in offices. With the amount of time spent in buildings, the physical conditions in the workplace are important determinants of satisfaction, comfort, well-being, and effectiveness and can even play a role in mental health. The physical environment in offices should therefore be carefully planned, designed, and managed.

This qualitative study, sought to develop an inter-cultural office design framework for South Africa combining Eastern and Western design principles. Specifically, it sought to obtain a better insight into design principles which can enhance the well-being of office workers; inter-cultural, gender neutral and age neutral design principles which can be applied in a South African context. To be able to answer these questions an intensive literature review was undertaken investigating both the Eastern design principles as expressed in *feng shui* and Western design principles as expressed in Environmental Social Science. The design principles of these two traditions were compared and all aspects where the two traditions did not support each other were included in the in-depth interviews. Twenty-five in-depth interviews were conducted

By relying on various design cultures (e.g. Eastern and Western) an environment can be created which are pleasing and can enhance the well-being of the users. Underlying design principles are universal, but the symbolic expression thereof can differ from culture to culture. One of the conclusions from this study is that three quarters of design principles are

universal. There is no one size fits all solution and compromise is necessary from all involved. The compromise applies to the roughly a quarter of design aspects where subgroup differences have been detected.

Any design should take individual and group difference into account. The only way to do this is to get proper input from all stakeholders at all stages of the design. It is critically important that the input starts before the design process commences.

There are many design principles which can be implemented to improve the quality of work life of office workers in the South African context. Design can for example play a very important role in encouraging and facilitating formal and informal interaction in the workplace – bridging the gap between heterogeneous groups. Without forcing relationships, design can assist in naturally integrating heterogeneous groups.

The physical environment must support the image and identity which needs to be communicated, facilitate communication and enable task accomplishment. Most of all it must become a place with which employees can identify and where they can develop a sense of place. From this study it can be concluded that not only form follows function but also that **aesthetics follow function** – a principle that design should be based on the primary purpose of the building, the workspace based on the needs of the stakeholders and from this starting point aesthetics will flow.

### **Key Concepts**

Design Psychology; Environmental Psychology; physical office design; aesthetics; well-being and wellness of office workers; *feng shui*, the new office; improved productivity; sense of place; inter-cultural office design framework; office design development; guidelines for optimal office design.

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**STATEMENT OF ORIGINAL AUTHORSHIP**

I declare that **EMBRACING EASTERN AND WESTERN PRINCIPLES: TOWARDS AN INTERCULTURAL OFFICE DESIGN FRAMEWORK** is my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references.

**SIGNATURE**

	
.....	.....
<b>EM THIRION-VENTER</b>	<b>DATE:</b>

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## Chapter 1

### 1. INTRODUCTION

*“If you have a building that is beautiful in ways that add to your efficiency and productivity, it cannot be considered an extravaganza. It is an investment in controlling costs and in your staff. Your building then becomes a legitimate and effective business tool, and an extension of your management style.”* (Obata, 1987, p. 60)

#### 1.1 BACKGROUND AND CONTEXT

##### **The importance of the workplace**

The workplace forms a significant part of a working individual’s life. Brill, Weideman and the BOSTI Associates (2002, p. 17) define the **workplace** as a term encompassing the entire physical work environment. It can for example include the whole building or only a floor or floors in a building. The workplace consists of a number of workspaces. They also define the **workspace** as the space where an employee sits when in the office. In the *New Office* (see Chapter 2) where office space is mostly not permanently allocated this would be where an employee sits most of the time.

An employed individual will spend between a quarter and a third of his or her waking life at the workplace. According to Charles, Danforth, Veitch, Zwierzchowski, Johnson and Pero (2004), Evans and McCoy (1998) and McCoy (2002) American people spend an estimated 90 percent of their time indoors. It is estimated that 50 percent of North Americans work in offices. An estimated 40 percent of those in South Africa who are employed full-time work in offices (All Media and Product Survey [AMPS], 2010). It is inevitable with the amount of time spent in buildings, that the physical conditions in the workplace could play a role of satisfaction, comfort, well-being and effectiveness (Charles et al., 2004), and can even play a role in mental health (Halpern, 1995). The physical environment in offices should therefore be carefully planned, designed and managed (Charles et al., 2004). Evans and McCoy (1998) are of the opinion that we know more how ambient environmental conditions affect human health than how the built environment actually influences health: *“(b)uilding design has the potential to cause stress and eventually affect human health”* (Evans & McCoy, 1998, p. 92). Galindo and Rodriguez (2000) are of the

opinion that contact with aesthetically pleasing environments, can increase well-being.

The possible impact and importance of the workplace are illustrated by the following authors:

- A quarter to a fifth of the variation in adult life satisfaction can be accounted for by satisfaction with work (Campbell, Converse & Rogers, 1976).
- Measures of job satisfaction correlate in the range of 0.50 and 0.60 with measures of life satisfaction (Judge & Watanabe, 1993; Spector, 1997).
- The nature of work such as routinisation, supervision and complexity has been linked causally to an individual's sense of control and depression (Kohn & Schooler, 1982).
- Depression plays a major role in the reduction of productive years (Murray & Lopez, 1996).

**Figure 1.1 The role of the physical environment in the work environment**  
(Charles et al., 2004, p. 9)

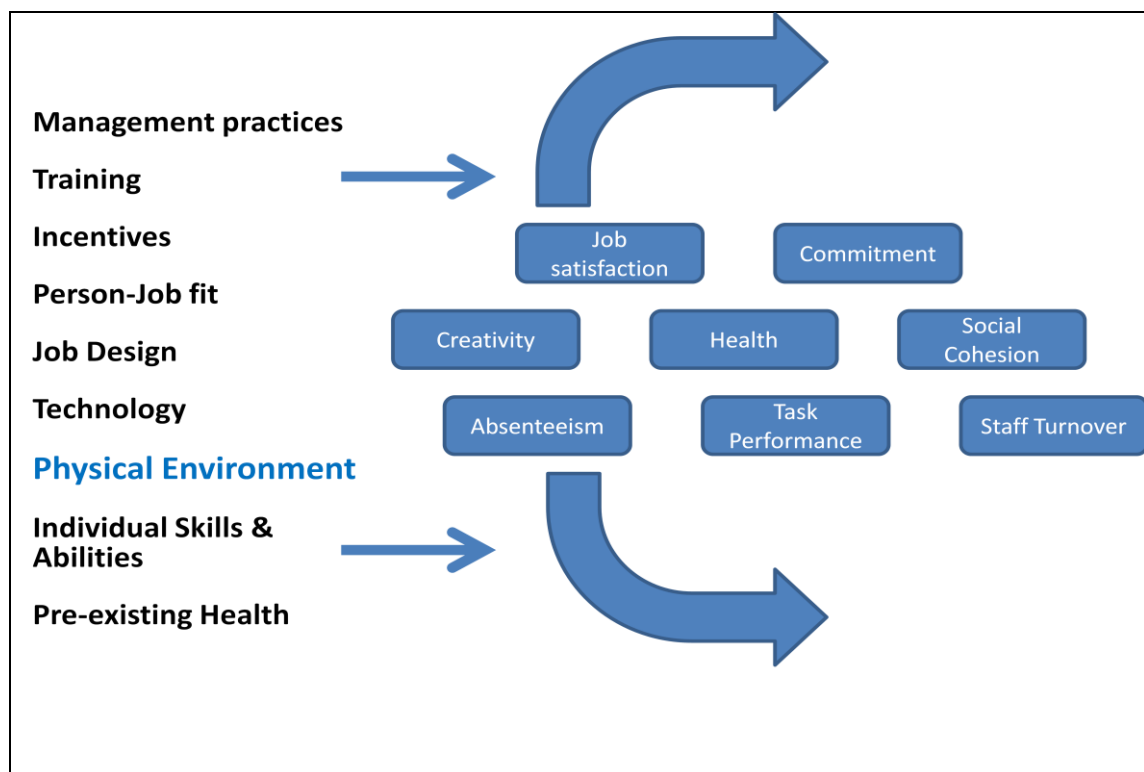


Figure 1.1 illustrates the complexity of the multiple variables that can play a role in the work environment. In the words of McCoy (2002, p. 443): *“The physical workplace is one component of the complex system of relationships on the changing work environment. While much research on human behavior in the workplace focuses on social dynamics, comparatively little attention has been paid to the role of the physical environment within the organisation”*.

Vitruvius (a Roman architect in the first century) indicated that the three goals for architecture are firmness, commodity and delight (Gifford, Hine, Muller-Clem, Reynolds & Shaw, 2000, p. 180). According to King (2011) this can be translated to structural stability, appropriate spatial accommodation and attractive appearance. This study will focus mainly on the delight part of design. Kopec (2006, p. 243) reports on research that demonstrates that people in general are more comfortable in interior spaces that are decorated while employees in work spaces with little or no architectural detail feel deprived, have feelings of embarrassment, loss of prestige and vulnerability. They compensate with behaviours ranging from social withdrawal to quitting. McCoy (2002) also indicated that aesthetics, privacy, furniture, communication, temperature control and lighting were related to job performance, quality communication and job satisfaction. Canter (1983, p. 36) is of the opinion that the workplace environment can contribute in the following ways to improve productivity:

1. By providing the appropriate conditions to fulfil assigned tasks.
2. Facilitating communication between employees.
3. Provide symbolic identification to individuals, groups and the organisation itself.
4. Enable growth, development and change.

Although there are indications that the physical environment can influence inhabitants, according to Charles et al. (2004) organisations still view costs associated with the physical office as a cost that needs to be minimised. Physical office costs are direct costs which will have an impact on the bottom-line and make the organisation appear less profitable in the short term. This view, however, is short-sighted as staff costs are much higher than the initial expense (Charles et al., 2004). It is estimated that only eight percent of the total costs of the office environment can be attributed to

the physical environment, the remaining 92 percent are attributed to employee cost (Brill et al., 2002).

Some business outcomes are difficult to quantify for example the value of satisfying customers and it is even more difficult to pinpoint the effectiveness of a strategy such as an alternative, innovative office design (Charles et al., 2004). Charles et al. (2004) maintain that poor design can result in problems which can reduce the effectiveness of task performance (e.g. the lack of privacy and noisy disruption in open-plan offices) and cost the organisation more in the long run. Any office design which does not optimise comfort and well-being can also result in increased staff turnover and absenteeism (Charles et al., 2004). Employee attitudes influencing job satisfaction, commitment to organisation, interaction with co-workers, absenteeism, employee health and well-being all inter alia influence organisational productivity and behaviour (Charles et al., 2004).

### **The workplace and well-being**

The main purpose of Environmental Behavioural Science “*is to improve quality of life and create better places for people*” (Habib, 2008, p. 6). The above can have a positive impact on physical, psychological and emotional health and well-being and promote e.g. efficiency, accuracy, calmness and harmony, energy, as well as quality of sleep) (Bodin Danielsson, 2010). In the words of Harter, Schmidt and Keyes (2003, p. 3) “*work is a pervasive and influential part of the individual and the community’s well-being*”.

The well-being of an employee is not only in the interest of the employee, but also the employer. Employers invest substantial amounts in recruiting, training and employing employees. Spector (1997) suggests that satisfied employees are more cooperative, more punctual, less absent, more helpful, and remain with the company for longer. Employees, who experience more positive emotional symptoms than negative ones, received higher performance ratings from supervisors than those with more negative emotional symptoms (Wright & Cropanzano, 2000; Wright & Staw, 1999). According to Harter et al. (2003, p. 3) “*(t)he emotional well-being of employees and their satisfaction with their work and workplace affect citizenship at work, turnover rates and performance ratings*”. In the same study they concluded

that as managers and employees focus on satisfying basic human needs in the workplace and increasing opportunity for individual fulfilment and growth, they may increase the opportunity for success. Harter et al. (2002, p. 16) continues: *“(w)orkplace well-being and performance are not independent. Rather they are complimentary and dependent components of a financially and psychologically healthy workplace”*.

Well-being and wellness are often used interchangeably. Some definitions of wellness clearly put it in the “health” context. For example Mulvihill (2003, p. 13) defines wellness as: *“A set of organized activities and systemic interventions, offered through corporations/worksites, managed care organizations, and governmental/community agencies, whose primary purposes are to provide health education, identify modifiable health risks, and influence health behavior changes”*. Well-being is defined as a broader more encompassing term. In his definition of workplace well-being personal growth, Keyes (1998) includes purpose in life, positive relations with others, environmental mastery, social integration and social contribution. Danna and Griffen (in Bergh & Theron [Eds], 2006) describes well-being as a person’s experience of life within all spheres of daily activity, specifically the person’s self-reported happiness and perceived life satisfaction as determined by the individual’s global assessment of his or her own life, based on her or his own criteria.

### **Multidisciplinary influences**

The study lies in the field of Environmental Psychology or the broader description of Environmental Behavioural Science as Habib (2008) described it. The field’s multidisciplinary nature is illustrated by the backgrounds of the Environmental Behaviour Studies pioneers: Lynch - an urban designer, Hall - an anthropologist, Roger Barker and Robert Sommer - psychologists as well as Christopher Alexander - an architect (Bechtel, 1997). Environmental Social Science lies inter alia in the field of psychology, architecture, ecology, environmental sociology, sociology, medicine, anthropology and social geography (Habib, 2008; Pol, 1993). The design of physical work spaces is influenced by organisational, environmental psychology, industrial design, human factors, engineering and business (McCoy, 2002).

Cassidy (1997, p. 5) discusses the basic principles of environmental psychology:

1. Behaviour in relation to the environment is a function of the person, the environment, and the interaction between the two.
2. The focus is on applied research integrating theory and practice.
3. The analysis is on various levels, namely individual, group and societal/organisational levels.
4. Research is based in the field or natural environment and not laboratory based.
5. Multiple methods are used to validate each other, qualitative and quantitative methods, basic and applied research.
6. A person actively interacting with the environment and giving the person a degree of autonomy.
7. It is interdisciplinary in nature.
8. The approach is holistic with all parts interacting with each other. Cassidy (1997, p. 5) uses the analogy of completing a jigsaw puzzle without knowing what the complete picture would look like.
9. There is an interrelationship between different aspects in the environment. Change in one part can influence other parts in the system (a systems model).

Two highly important concepts in Environmental Social Science are that a reciprocal relationship between humans and their physical environments exists, and that humans and the environment affect each other (Habib, 2008). As Brebner (1982, p. 3) describes it: *“variables which affect performance do not act independently but interact together. The effect of this is that sometimes, a new, perhaps seemingly unimportant variable may have a disproportionate effect upon performance”*. The author is of the opinion that the latter statement makes the field so much more difficult to study. Changing one variable in a system will affect other variables - not only in the particular system but also possibly in other systems. Designers should not only consider particular elements of a design, but also their relation to the design as a whole and the greater environment (Lidwell, Holden & Butler, 2003, p. 76).

The interactive nature of Environmental Behavioural Studies also has the implication that *“satisfaction with particular environments can only be predicted if the level of personal control, culture, environmental role and personal characteristics are entered into the equation”* (Griffiths, Huber & Baillie, 1988, p. 53).

Kopec (2006, p. 3) is of the opinion that researchers in the Environmental Psychology field should be careful not to be deterministic (that is to conclude that preceding events and conditions determine every succeeding event) and avoid attributing an effect entirely to a single cause. The field of environmental psychology follows a multivariable approach. This multivariable paradigm results in the holistic analysis of a combination of perspectives, namely the cognitive, humanistic, learning or behavioural, neurobiological and socio-cultural perspectives (Kopec, 2006, p. 4).

### **Buildings, cultural context and meaning**

Israel (2003) maintains that the best buildings outside the home are those that embrace our needs for:

- individual and collective shelter,
- psychological and social growth, and
- beauty.

To achieve the above designers rely on combining the principles of technology, and aesthetics as well as familiar cultural signs and symbols.

Culture has a profound effect on what is designed, how it is designed and what is perceived to be aesthetically pleasing in a certain time period (Kopec, 2006, p. 6). Different regions have different characteristics. Inhabitants therefore need to develop a variety of ways to cope with environmental situations and challenges in an attempt to fulfil their needs (Habib, 2008).

An important concept related to the context of a building is the “*Rich Response Repertoire*” (RRR), which involves many different responses or reactions to a single situation (as opposed to the human evolution theory which postulates that humans are predisposed to react in a certain way) (Bechtel, 1997). Bechtel (1997, p. 49) states that this richness in responses is the key to evolutionary success and survival, for example inhabitants in arid regions developed hunting techniques to survive, while in tropical regions rich with vegetation inhabitants depended more on agriculture. People also get accustomed to and develop a preference for diverse situations because they had been exposed to it culturally from childhood. For example in some cultures

a thick wall is used to screen out sounds, while in others people are used to open spaces and sounds (Habib, 2008).

This is amply illustrated by the various architectural styles in different cultures, climates and time periods. A good example is the comparison of the various cultural types (Maruyama, 1990; 1996; 1999) and the main office traditions (Bodin Danielsson, 2010; Duffy, 1997) which is discussed in greater depth in paragraph 2.1.1. European and North American architecture tend to be of the H (hierarchy, homogeneity) and I type (isolationism, individualism, independence). Japan is a mixture of G type (generating), S type (stabilizing) and H (hierarchy, homogeneity) (Maruyama, 1990). Types H and I are flip sides of the same coin and likewise types G and S (Maruyama, 1999).

Social evolution also directly influences design. Research into perceptions, preference, interpretations and world views needs to be conducted on an ongoing basis to obtain insight and provide input into designs that users would more likely relate to (Kopec, 2006, p. 6).

From a semiotic perspective, buildings have denotative and connotative values built into them (Danesi, 2008). On a denotative level a building is a shelter protecting us from the elements and intruders. It demarcates territory and private boundaries. But they are not merely shelters - buildings also have a connotative value. Each room in a building has a specific type of connotative meaning. Danesi (2008) gives the example of a bedroom. Bedrooms are usually kept out of the line of sight partly because we are vulnerable when we sleep and partly because it is our “*self-space*”. Here we display our persona through objects bearing meaning such as photographs, and we only allow people close to us to share the space.

Human behaviour is context-related (Canter, 1988). Buildings are signs in which **size, shape and location** bear meaning (Danesi, 2008).

**Size and shape:** Since early ages, men built imposing structures commanding attention, of which Stonehenge is an early example. The form of the church towers, pyramids in Egypt, the Mayan and Inca cultures, the hemispherical mound in India all



reach out to the heavens imparting a sense of awe. Today a never-ending “*race*” to build the “*tallest building*” still exists. In the Middle Ages churches were the tallest buildings in a town and were literally and symbolically places of power and wealth. As churches lost power they were replaced by palaces and public buildings. Today the tallest buildings are those owned by large corporations and banks, indicating where wealth and power resides (Danesi, 2008). The inside of office buildings mirrors the Western hierarchical structure – the most important positions are traditionally on the top floors. As Danesi (2008, pp. 154-155) puts it: “*(t)he company's executives reside, like the gods on Mount Olympus on the top floor. The atmosphere is perceived to be rarefied and otherworldly*”. This architectural symbolism finds expression in sayings such as “*to work one's way up*”, “*to make it to the top*”, “*to climb the ladder of success*” and “*to set one's goals high*” (Danesi, 2008, p. 155).

**Location:** certain areas signify more prestige than other areas e.g., in certain cities an office building in the city centre signifies more prestige than a building on the outskirts of town, while in others city centre buildings signify less prestige.

**Aspects influencing our perception of the environment: Age, gender, race**

In the complex interaction between humans and the environment many individual and group characteristics can play a role - not only in perceiving the physical environment, but also in social and physical stress. Of these, age, gender and race are three characteristics which could play a role in environmental perception and behaviour (see for example Bengoechea, Spence & Kannon, 2005; Bergh & Theron [Eds.], 2006; Parrillo, 2008; Schulz, Zenk, Israel, Mentz, Stokes, & Galea, 2007; Stewart, Bing, Gruys & Helford, 2007).

According to Berg (2006, p. 479), age and gender are the two most common biographical factors used in research to explain personality and other psychological differences. In this study, apart from age and gender, race (representing meta-culture) will also be used as one of the explanatory variables. Different cultures (representing a system of values, beliefs, customs and habits) place a different emphasis on aspects such as group work, independence and authority (Werner & Roythorne-Jacobs, 2006, p. 263). These differences can cause people to not only react in difference ways in the

work environment, but also to perceive the environment differently and have different requirements in the physical working environment.

### **The wholeness of experience**

In Gestalt terms, the individual experiences the environment as a whole. The individual as observer combines elements in her/his mind to create the whole experience, rather than breaking it up into smaller elements (Theron in Bergh & Theron [Eds.], 2006). Cassidy (1997, p. 17) is of the opinion that according to the Gestalt approach, studying aspects of the external environment is irrelevant since the pictures of the external world that people have inside their heads are what matters.

The author is of the opinion that this complicates research in the field. Looking and assessing the elements in a design, is what is required, but that is not the way the human subject would observe her/his environment.

## **1.2 THE RESEARCH PROBLEM**

Well-being and wellness in the workplace depend on a variety of aspects. These would include variables of an individual nature (e.g. values, health, coping mechanisms), organisational nature (e.g. personnel policies, job design, physical layout), organisational behaviour and processes (e.g. leadership, communication systems, group relations and processes), and personal outputs (e.g. clarity of role and objectives, feelings of personal growth and efficiency, intrinsic and extrinsic satisfaction) (Berg, 2006, p. 437). All these factors function within the micro and macro environments for example family, social groups, the market, the economy, technology, political milieu (Berg, 2006, p. 437). Within the complexity of all these variables and the interaction between them, the individual subjectively assess her/his well-being, consisting of emotional, psychological and social components (May, 2006, p. 390).

Within this complicated interactive system, the physical office environment is one of the variables which can have a possible influence on the individual's subjective assessment of her/his well-being. Currently scant (if any) reference is made in well-being models to the physical environment.

The physical office environment includes the following aspects (as will be discussed in Chapters 3 and 4):

- **Amenities and facilities**
- **Ambient factors:** e.g. temperature, ventilation, lighting
- **Noise and privacy**
- **Design-related factors:** e.g. workstation design, workspace design, office design
- **Décor related factors:** e.g. furniture, colour, water, plants
- **Social interaction and communication:** networks design aspects
- **Territoriality:** within a work group, between work groups and the office as a whole
- **Personalisation:** of the workstation and the use of symbols in the workplace

Studies have been conducted looking at specific aspects such as lighting (numerous studies) and office design (Bodin Danielsson, 2010; Mills, Tomkins, & Schlangen, 2007). *“While much research on human behaviour in the workplace focuses on social dynamics, comparatively little attention has been paid to the role of the physical environment within the organisation”* (McCoy, 2002, p. 443).

Evidence in previous studies indicates that the physical environment can probably be designed to reinforce human behaviour and well-being (e.g. Evans & McCoy, 1998; Lawsons, 2001). A study investigating the design aspects of the physical office environment as a whole, however, is lacking.

## **1.3 RESEARCH QUESTION AND OBJECTIVES**

### **Overall objective**

The overall objective of the study is to develop an inter-cultural office design framework for South Africa combining Eastern and Western design principles.

### **Specific objectives**

- To identify and describe the design principles which can enhance the well-being of office workers.
- To establish inter-cultural design principles that can be applied in a South African context.
- To establish gender neutral design principles that can be applied in a South African context.
- To establish age neutral design principles that can be applied in a South African context.

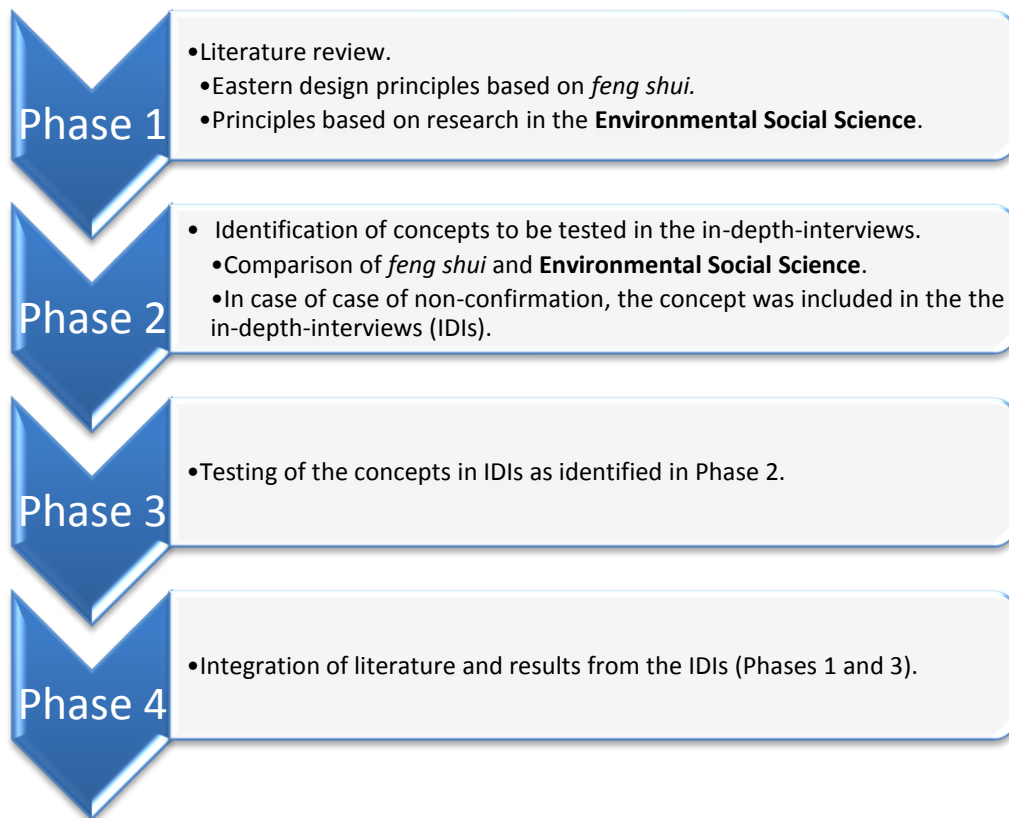
### **Research questions**

- Which design principles can enhance the well-being of office workers?
- Are there inter-cultural design principles that can be applied in a South African context?
- Are there gender neutral design principles that can be applied in a South African context?
- Are there age neutral design principles that can be applied in a South African context?

## 1.4 OVERVIEW OF METHODOLOGY AND SCOPE

A qualitative approach was followed. The information gathering process was divided into four phases. The four phases are given below in Figure 1.2.

**Figure 1.2 The research process**



### 1.4.1 PHASE 1: Literature review

An intensive literature review, the theoretical concepts and concepts in previous studies were identified. This was done from both the Environmental Social Science perspective (representing Western design) and the Eastern design philosophy of *feng shui*.

### 1.4.2 PHASE 2: Identification of concepts to be tested in the in-depth-interviews

Based on the literature review, the Environmental Social Science results and the Eastern design philosophy of *feng shui* were compared. Concepts were included in the in-depth interviews where there was either a contradiction between the two perspectives, or where results were not confirmed by both perspectives.

### **1.4.3 PHASE 3: Validation and analysis of concepts**

#### **Interviewing methodology and sampling**

In-depth interviews were conducted with a judgement sample of people who had worked in an office environment. With a judgement sample the researcher is not attempting to sample a cross-section of respondents, but rather identifying those who can offer a perspective on the research question (Loubser, 1996; Nel, Rädell & Loubser, 1988).

#### **Sample size and area**

Twenty-five in-depth interviews were conducted in Gauteng.

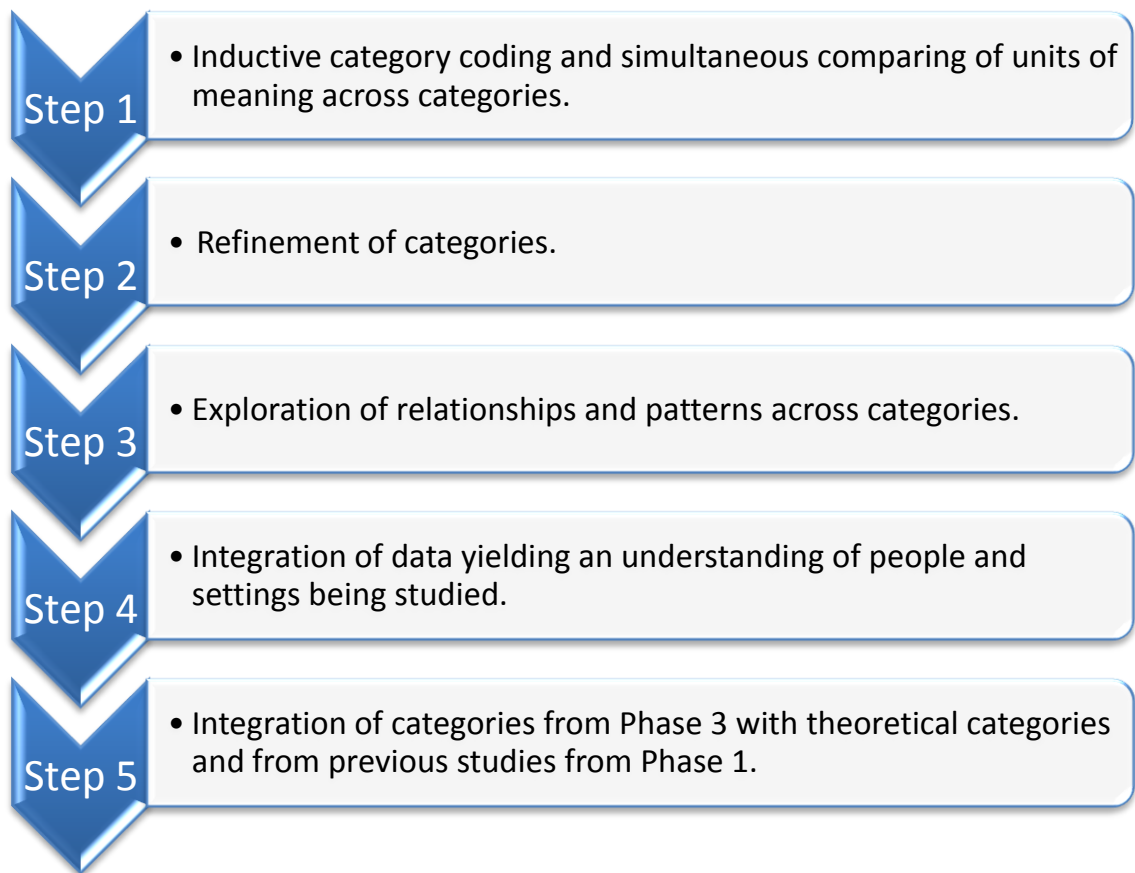
#### **Analysis**

The constant comparative method of analysis was used. This method of analysing qualitative research combines inductive category coding with simultaneous comparison of all units of meaning obtained (Maykut & Morehouse, 1994). *“As each new unit of meaning is selected for analysis, it is compared to all other units of meaning and subsequently grouped (categorised and coded) with similar units of meaning. If there are no similar units of meaning, a new category is formed”* (Maykut & Morehouse, 1994, p. 134).

During the process the units of meaning are continuously refined: initial categories can change, merge with others or be omitted. New categories can be generated and new relationships can be discovered (Maykut & Morehouse, 1994).

The process is visually presented in Figure 1.3 (Maykut & Morehouse, Maykut, p. 135).

**Figure 1.3 Steps in Analysis**



#### **1.4.4. PHASE 4: Integration of literature and results of interviews**

In this phase the literature based on *feng shui* principles, Environmental Social Science and the results from the in-depth interviews are integrated and discussed.

### **1.5 WHY THE STUDY IS IMPORTANT**

The purpose of this study is not to find or prove causality or correlation but rather to obtain a better understanding and add to the body of knowledge in understanding what constitutes design that is beneficial to people. As discussed earlier, culture plays an important role in the context of design and aesthetic assessment. In South Africa, as a multicultural society, office workers could benefit from a design framework that can be to the advantage of all.

The world is increasingly becoming a global village resulting in increasing contact and the inevitable cross pollination between cultures. Taking the best, well-being enhancing design principles from various cultural backgrounds, can strengthen design.

An intercultural design model with the ability to create a sense of place, can enhance a sense of belonging which in turn, can contribute to the well-being of the majority South African office workers

## **1.6 OVERVIEW OF THESIS**

The structure of the thesis follows the structure of the research process phases as set out in paragraph 1.4. Chapter 1 provides an overview of the background and design. In Chapter 2 the scene is set in discussing the background and history of office development, major impacts and development and their impact on office design, current office design philosophies and Design Psychology. Design needs models are discussed as well as examples to obtain user input in design. Chapters 3 and 4 contain the literature review. In Chapter 3 the overall design principles and philosophies are discussed and in Chapter 4 detailed design concepts are addressed. In Chapter 5 the methodology is discussed, and in Chapter 6 the results of the in-depth interviews are provided. The results are discussed in Chapter 7, and Chapter 8 contains the conclusions.



## Chapter 2

# 2. OFFICE SPACE AND DESIGN: BACKGROUND AND DEVELOPMENT

*“Because the success of a building depends primarily on how well people are able to work and live within it, the best designs begin from the inside out.”*  
(Obata, 1987, p. 57)

### 2.1. THE HISTORICAL DEVELOPMENT OF OFFICE SPACE AND DESIGN

In this chapter background information about the development of office space as well as the possible impact of the built environment on well-being and mental health will be discussed. The fast technological development of recent decades revolutionised the use of office space and has the potential to change where and how we work: *“(t)echnology is creating a huge revolution in office design, affecting where, how, when, and what work is done”* (Wallace, 2000, par 2). Technological advancements make changes in the office environment possible and are to a large extent driving the changes, but these possible changes are not without controversy and opposition.

Office design has also been influenced by psychological theoretical approaches underlying human behaviour. The theoretical approaches started with the emphasis on ambient factors, evolving towards the individual as part of the system and, eventually, Design Psychology where the employee’s input to create a sense of place is central. The employee therefore became increasingly important and is placed more and more at the centre of design. The psychological theoretical approaches are summarized in Table 2.1.

**Table 2.1 Theoretical approaches to the psychology of the workplace**

<b>Fields of psychology</b>	<b>Approaches</b>
	<b>Pre-Hawthorne</b>
<b>Applied psychology</b> (Sundstrom & Sundstrom, 1986, p. 54)	<ul style="list-style-type: none"> <li>• Focus on ambient conditions (especially temperature, noise, lighting).</li> <li>• Individual level of analysis.</li> <li>• Mechanistic, deterministic model of person-environment relationships.</li> </ul>
	<b>Post-Hawthorne</b>
<b>Industrial-organisational psychology</b> (Sundstrom & Sundstrom, 1986, p. 54)	<ul style="list-style-type: none"> <li>• Focus on physical environment as component of job satisfaction.</li> <li>• Individual, interpersonal organizational levels of analysis.</li> <li>• System models (especially socio-technical system).</li> </ul>
<b>Human factors psychology</b> (Sundstrom & Sundstrom, 1986, p. 54)	<ul style="list-style-type: none"> <li>• Focus on equipment design, ambient conditions</li> <li>• Individual level of analysis, sometimes interpersonal level.</li> <li>• Reciprocal model of person-environment interaction (man-machine system), sometimes deterministic model.</li> </ul>
<b>Environmental psychology including architectural and green psychology</b> (Sundstrom & Sundstrom, 1986, p. 54)	<ul style="list-style-type: none"> <li>• Focus on offices as total environments.</li> <li>• Interpersonal and organizational levels of analysis.</li> <li>• Socio-psychological and ecological models.</li> </ul>
<b>Design psychology</b> (Israel, 2003)	<ul style="list-style-type: none"> <li>• Architecture must speak to all our human needs and challenge us to assimilate and adapt to new forms in such a way that it does not overwhelm or diminish us.</li> <li>• Equilibrium must be achieved between the security of shared, familiar, conventional signs and symbols around us and the unlabelled experience of place that resonates as poetry without words.</li> </ul>

Currently technology is gaining strong momentum with the movement of work anywhere, anytime (as illustrated in for example in various books by Duffy e.g. *The Changing Workplace*, 1992; *Design for Change: The architecture of DEGW*, 1998; *The New Office: With 20 international case studies*, 1997).

## 2.2. THE HISTORICAL DEVELOPMENT OF OFFICE SPACE AND DESIGN

### 2.1.1. The development of office buildings

The first “*offices*” were places where lawyers, brokers, bakers etc. conducted their business (Pile, 1976): sometimes it was merely a room in a house (Christiansson & Eiserman, 1998) or sometimes in the corner of a shop (Logan, 1961) or tavern. A major drive for the development of office buildings in the United States was the emergence of large corporations. The simultaneous expansion of technology such as the telephone, the typewriter and the calculator between 1880 and 1900 supported the rapid growth of office work (Sundstrom & Sundstrom, 1986).

Early buildings, before electricity and the light bulb were invented, were limited in width because of limitations with visibility - further than 16 feet from a window resulted in inadequate light (Hill, 1893 as cited in Sundstrom & Sundstrom, 1986). According to Sundstrom and Sundstrom (1986), office workers of the early 20<sup>th</sup> century did not benefit from the welfare programmes for factory workers e.g., office workers often had to walk several flights of stairs to a restroom (if one existed at all). Conditions improved in the 1920s and 1930s, as reports from factories of improved productivity as a result of the improved conditions became known. In the 1940s electric lighting was commonplace and electrical heating and ventilation systems were introduced into the workplace. The 1950s saw the introduction of “*recreation management*” with the introduction of recreational facilities in office complexes. The 1960s and 1970s were characterised by the fast development of computers and the video display terminal and the resulting explosion of word-processing technology. According to Bodin Danielsson (2010, p. 15) the architectural efforts of buildings in the 50’s, 60’s and 70’s, were put into “*common spaces such as the entrance halls, the conference rooms and the dining rooms; whereas much was left with the regard to the design of the individual cell-offices*”.

Office buildings often included detailed architectural work such as beautiful wooden wall panels, shiny brass interior details and full cut glass doors (Bodin Danielsson, 2010) “*at least partly in the belief that attractive buildings produced better work*” (Sundstrom & Sundstrom, 1986). As early as 1921, Diemer (1921, as cited in

Sundstrom & Sundstrom, 1986, p. 17) mentioned that, a building should have a pleasing appearance for psychological reasons.

A summary of key developments that had an impact on office work and therefore also on the development of office space is provided in Table 2.2.

**Table 2.2 Some key developments in the evolution of the office\***

<b>Date</b>	<b>Development</b>
1849	Early US office buildings - Arcade Building, New York City
1860s	Iron frame construction of buildings
1870	Office buildings with elevators
1874	Commercial adaptation of type-writer (Remington)
1876	Telephone patented by Alexander Graham Bell
1879	Electric light bulb (Edison)
1884	Steel frame office building - Home Insurance Building, Chicago consisting of 10 stories
1894	Mechanical calculators commercially available (Burroughs)
1904	Open office building -Larkin Building, Buffalo
1906	Telefax messages
1930s	Refrigerated air-conditioning
1954	Programmable electronic computers
1958	Solid state electronics
1960s	Cathode ray tube (CRT) and video display terminal (VDT)
1960s	<i>Bürolandschaft</i> (1967 in the United States)
1970s	Video conferences, electronic mail, advanced telephones, feasible fax machines
1980s	Desktop computers
1989/1990	Launching of Microsoft Office and Windows 3.0
1990s	Adoption of e-mail and Internet connectivity as a global standard, mobile phones, notebooks, palmtops and still developing

\*Sundstrom & Sundstrom, 1986, p. 33; <http://www.itweb.co.za/sections/features/paperlessoffice/feature0710150705.asp>, <http://en.wikipedia.org/wiki/Microsoft>)

Technological advances such as the launching of Microsoft Office in 1989, Windows 3.0 in 1990 (<http://en.wikipedia.org/wiki/Microsoft>) and broadband revolutionized the world of the office worker and the world in general. Making computers easy to use and more accessible (combined with decreasing cost), opened up endless new possibilities as described by Duffy in various publications such as his book *The New*

*Office* (Duffy, 1997). Office space could now evolve from territorial to non-territorial (Wallace, 2000).

Office space and planning have evolved over the years with different designs being seen as the ideal or most practical. According to Duffy (2007, pp. 123-124) the development of the office in the 20<sup>th</sup> century can be divided into the Taylorist era of Scientific Management where centralized measurement and top-down control were key. The physical design emphasized hierarchies in the organization and highly standardized open-plan offices facilitated supervision. The first major deviation was the *Bürolandschaft* movement of open plan office design from North Europe followed by the Social Democratic office in the 1970's.

According to Walker (1992) *Bürolandschaft* was developed in Germany during the late 1950s and early '60s and literally means "*office landscape*". It further explored the U.S. developed open-plan offices of the time. The soft lines of a landscape were simulated, reinforced by the ample use of potted plants - in contrast with the standardised, harsh lines of the open-plan office of the period. Departments and furniture were also organised according to workflow (in contrast to hierarchies or seniority). The Social Democratic office allowed all workers access to an individual office assigned on democratic principles. These offices were the same size, with views, natural light and ventilation as well as ergonomically designed furniture (Duffy, 2007).

Duffy (2007) describes the next major development as the networked office which was a result of the development of the desktop computer and subsequent developments. This allowed for increased mobility and non-territoriality.

The various office types over the years are shown in Table 2.3.

**Table 2.3 Historical office types\***

<b>Office types</b>	<b>Period</b>
<i>Rooms in houses, corners in shops, taverns</i>	Pre-office palaces
<i>Office palaces/Office houses</i> (shops on ground floor, offices in middle floors and apartments on top floor)	Mid 19 <sup>th</sup> /Late 19 <sup>th</sup> century
<i>Corridor office</i> (cellular – enclosed unit)	Late 19 <sup>th</sup> /Early 20 <sup>th</sup> century
<b>North American model</b>	
<i>Open-plan</i> (Bull Pens – large spaces under strict supervision of management an outcome of Taylorism)	Early 20 <sup>th</sup> century
<i>Flexible plan</i> layout (made possible by new building technique using supporting pillars instead of walls)	Early 20 <sup>th</sup> century
<i>Cell offices</i> (individual offices)	1950's
<b>North European reaction</b>	
<i>Bürolandschaft</i> (Landscape office)	Early 1960's
<ul style="list-style-type: none"> <li>• <i>Open-plan with individual control</i> (combination of open-plan and individually controlled work stations (cell offices) – right to personalise workstation, workstations structured in smaller groups and every workstation provided privacy as well as openness)</li> <li>• <i>Combi-office</i> (offices with glazed glass walls to common areas outside e.g. corridor)</li> </ul>	1970's/1980's
<b>Networked office</b>	
<ul style="list-style-type: none"> <li>• <i>Flexi-office</i> (no individual workstation, working materials stored in personal cupboards at the office, employees expected to do some work from outside office)</li> <li>• <i>Out-of-town business parks</i></li> <li>• <i>Casual office</i></li> </ul>	1980's
<i>Virtual office</i>	1990's and later
<i>Hotel offices</i> (small businesses share common facilities and have access to the most modern technology at reasonable cost)	Early 21 <sup>st</sup> century

\*<http://www.en.wikipedia.org/wiki/Office>; Kuang, 2009; Bodin Danielsson, 2010; Duffy, 1992

Office design can be divided into two broad traditions, namely the northern European and the North American tradition – a division made by the British architect Frances Duffy (Duffy, 1997). The two traditions are compared in Table 2.4 (Bodin Danielsson, 2010; Duffy, 1997).

**Table 2.4 Comparison of the Northern European and North American office building traditions**

<b>Northern European</b> Scandinavian countries, Germany, the Netherlands	<b>North American</b> United States, Canada, United Kingdom, Pacific Rim e.g. Tokyo and Hong Kong
<b>1. Low</b> building tradition - tends to be narrow to attain good daylight access.	<b>1. Tall</b> building tradition.
3. More likely to be situated in <b>suburban</b> areas.	3. “Hot” <b>city centres</b> . Symbols of economic strength and prosperity, dominating the skyline Less styled and tailor-made.
<b>4. High employee participation</b> in design – organizational culture less hierarchical. Greater emphasis on employees.	<b>4. End user not consulted</b> or considered. Greater emphasis on management and corporate image The architect and/or patron rules.
5. More <b>humanistic</b> post-World War II.	<b>5. Physical layout determining how work is done</b> dominant in the US for most part of the twentieth century.
<b>6. Good for employee well-being.</b>	<b>6. Person as machine</b> Resistant to change, but factors in the mid 80’s start to usher in major changes in the US. <b>Reasons:</b> <ul style="list-style-type: none"> <li>• Economic pressure</li> <li>• Technological advances</li> <li>• New types of management thinking</li> <li>• Inhumane</li> </ul>
<b>7. Questionable efficiency</b> in terms of occupancy costs because space not flexible.	

Apart from the difference between the Northern European and North American traditions, Maruyama (1990) also describes different cultural types which also manifest in designs of the physical environment. In Table 2.5 a summary is given of the characteristics of various design types. During a symposium at the 22<sup>nd</sup> International Congress of Applied Psychology (Maruyama, 1990) the various cultures supporting different design types were presented. European and North American architecture tended to be of the H (hierarchy, homogeneity) and I type (isolationism, individualism, independence). Japan displayed a mixture of three types of culture (Maruyama, 1990):

- G type (generating): the 11 000 year old Jomon culture;
- S type (stabilizing): the 2 300 year old Yayoi culture; and
- H type: the 1 500 year old Yamato culture of Korean origin.

Types H and I are flip sides of the same coin and similarly types G and S (Maruyama, 1999). According to Maruyama (1999) the current Japanese cultural types are a mix of all four types.

**Table 2.5 Types of design in existing cultures\***

<b>Concept</b>	<b>H-type</b>	<b>I-type</b>	<b>S-type</b>	<b>G-type</b>
<b>Perception epistemological structure and action</b>	Homogenist Universalist Hierarchical Classifying Sequential Eternal Competitive One truth	Heterogenist Nominalist Isolationist Randomizing Haphazard Temporary Unique Subjective	Heterogenist Mutualist Interactive Contextual Simultaneous Stability Cooperative Multi-objective	Heterogenist Mutualist Interactive Contextual Simultaneous Evolution Cogenerative Multi-objective
<b>Spatial composition</b>	Boundary Specialization Opposition Tension	Boundary Specialization Separation Indifference	Continuity Convertibility Absorption Interplay	Flow Convertibility Exploration Interplay
<b>Beauty</b>	Unity by similarity and repetition	Surprise Caprice Strangeness	Stable harmony among diverse elements Individuality of each element enhanced by combination with others Avoid similar elements	Changing harmony among diverse elements Individuality of each element enhanced by combination with others Avoid similar elements
<b>Meaning</b>	Clear without context	Individual's own meaning	Contextually determined	Ambiguity enables further development

\* Maruyama, 1990; Maruyama, 1996; Maruyama, 1999

According to Sundstrom and Sundstrom (1986) three issues repeatedly surface throughout the history of offices and factories, namely 1) comfort and efficiency; 2) communication and interpersonal relationships; and 3) productivity and effectiveness of organizations. Duffy (2007) describes the three E's as contributing factors of three levels of business objectives which are similar to Sundstrom and Sundstrom's design issues: 1) greater **efficiency**, 2) more consistent and powerful **expression** and 3) enhanced **effectiveness**.



**1. Comfort and efficiency (individual level of analysis)/greater efficiency**

Managers in the United States became concerned with the comfort of workers around 1900 – at the time believed to be related to production (Sundstrom & Sundstrom, 1986). Later, the physical comfort came to be viewed as a component of satisfaction with working conditions. “*Researchers sought to show that job satisfaction was associated with efficient performance, but the evidence was not consistent*” (Sundstrom & Sundstrom, 1986, p. 40).

According to Duffy (2007) greater efficiency is achieved by cutting occupancy and other costs especially using wireless technology which increases mobility. However, Wallace (2000) indicates that the space saved on individual offices is now spent on team and group areas, pointing to a flaw in this reasoning.

**2. Communication and interpersonal relationships (interpersonal level of analysis)/more consistent and powerful expression**

Workers were thought to communicate more if given the opportunity and offices were designed to increase visual contact and physical proximity - “*(w)ork places came to be viewed as vehicles for defining and reinforcing relationships*” (Sundstrom & Sundstrom, 1986, p. 40). According to Duffy (2007) the design of the workplace can be used to communicate corporate values, both internally to employees and externally to stakeholders. An office type therefore does not only refer to the physical aspects of the office, but also indicates how the organization would be perceived as well as the philosophies of the organisation (Brill et al., 2002).

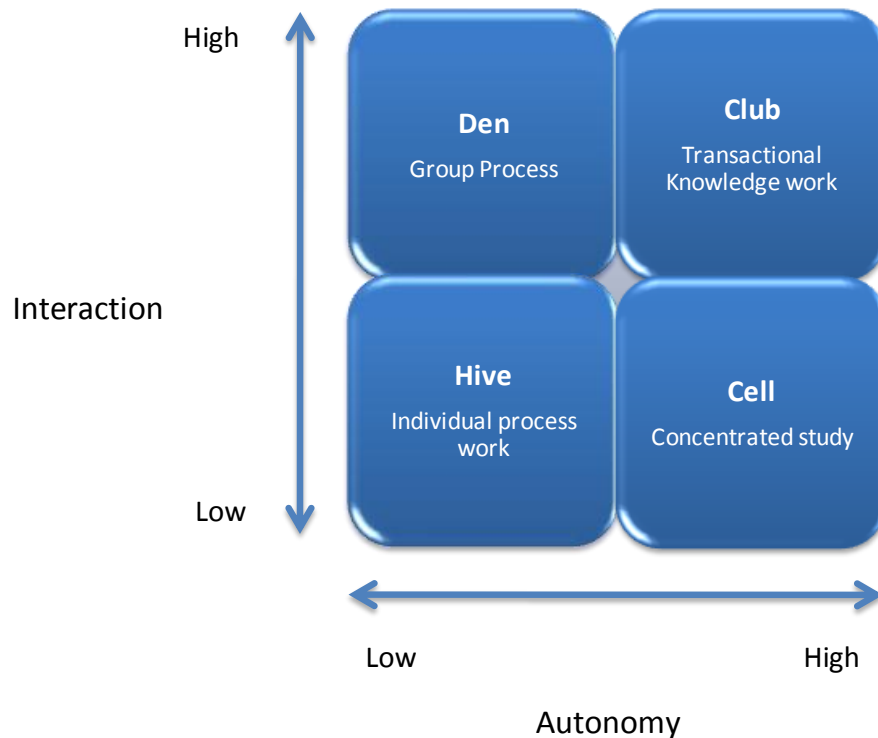
**3. Productivity and effectiveness of organizations (organizational level of analysis)/enhanced effectiveness**

At the turn of the century ambient conditions and workflow were seen as ways to encourage production through individual efficiency and coordination of work. Effective communication was later seen as enhancing productivity and the emphasis was shifted to use the physical environment to facilitate communication (Sundstrom & Sundstrom, 1986). Productivity is no longer seen as the criterion of success – it was replaced by the larger concept of organizational effectiveness (Katz & Kahn, 1979). The physical environment

plays a role as part of the sociotechnical system (Sundstrom & Sundstrom, 1986). Design can improve business performance by providing conditions for example to attract and retain staff, to stimulate creativity and support interdepartmental interaction: “(o)ffice design is now frequently integrated with deliberate attempts on the part of management to change organizational culture” (Duffy, 2007, p. 128).



The latter points are illustrated by the four major organisational types i.e. the Hive, Den, Cell and Club as described by (Jaunzens, 1997, p. 5). Each of these has a recognisable and distinctive work pattern associated with spatial design features. The level of autonomy and interaction determines the organisational type and the relationship as illustrated in Figure 2.1 (Jaunzens, 1997, p. 5). The Club implies both high interaction and autonomy (advertising agencies), the Den implies high interaction, but low autonomy (design consultancy), the Cell implies low interaction, but high autonomy (e.g., research) and the Hive implies low interaction and low autonomy (e.g., call centres).

**Figure 2.1 Level of interaction and autonomy**


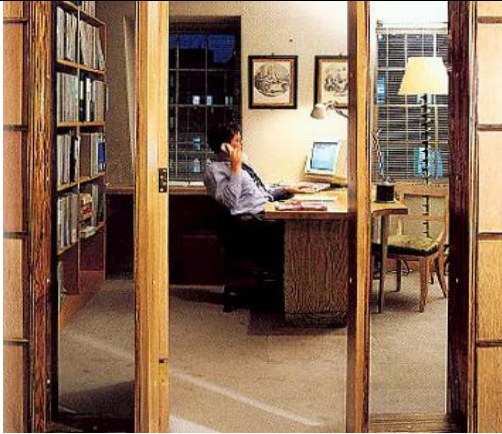


Jaunzen's (1997, pp. 5-6) definitions and characteristics and Wineman's (2007) illustrations for each type are given in Table 2.6.

**Table 2.6 Hive, Den, Club and Cell**

<p><b>Hive</b></p> <ul style="list-style-type: none"> <li>• individual routine process work</li> <li>• little autonomy</li> <li>• workstation style is uniform, relatively simple with rigid layouts</li> <li>• little opportunity for space use intensification such as hot desking as staff will rarely leave their desks</li> <li>• fixed working day and constant occupancy</li> <li>• e.g., telesales or call centres</li> </ul> <p>(Jaunzens, 1997, p. 5)</p>	 <p>Image: IBM office, NY, USA (Wineman, 2007)</p>
<p><b>Den</b></p> <ul style="list-style-type: none"> <li>• greater interaction</li> <li>• relatively straightforward and uniform team based work requiring a mixture of different interdependent skills</li> <li>• likely to carry out more varied tasks than those in a Hive</li> <li>• potentially a less rigid day depending upon the needs of a particular project</li> <li>• e.g., a design consultancy where different teams carry out the same tasks, applying them to different buildings</li> </ul> <p>(Jaunzens, 1997, p. 5)</p>	 <p>Image: ITN office, London, UK (Wineman, 2007)</p>

**Table 2.6 Hive, Den, Club and Cell (Continued)**

<p><b>Club</b></p> <ul style="list-style-type: none"> <li>• autonomous people requiring to be highly interactive from time to time, but also requiring their own space for concentrated individual work for varied tasks</li> <li>• a dynamic organisation with erratic and changeable occupancy pattern of individual and group settings</li> <li>• occupancy can be intermittent</li> <li>• other working patterns can also be incorporated e.g. the administrative pool may operate as a Hive</li> <li>• e.g., advertising agencies and management consultancies</li> </ul> <p>(Jaunzens, 1997, p. 6)</p>	 <p>Image: Chiat/Day, Venice, California, USA (Wineman, 2007)</p>
<p><b>Cell</b></p> <ul style="list-style-type: none"> <li>• low interaction, individual based, work - much higher degree of autonomy compared to the Hive</li> <li>• concentrated intensive periods of study and therefore privacy is required</li> <li>• opportunity for space sharing if people work elsewhere e.g. at home or at a client's premises</li> <li>• e.g., high level knowledge based work, such as research or computer programming</li> </ul> <p>(Jaunzens, 1997, p. 5)</p>	 <p>Image: London law firm (Wineman, 2007)</p>

### 2.1.2. *The New Office*

The asset value of employees as intellectual capital is increasingly recognized (Brill et al., 2002, p. 6). According to Brill et al. (2002) innovation and improvement is no longer the responsibility of a few but of all. Cross-functional teams are formed to reduce cycle time and responsiveness to customers and businesses move geographically closer to customers. The workforce now connects through technology. Technology makes it possible for the dispersed workforce to connect and home based work serves field locations with workers becoming “*periodic office residents*” (Brill et al., 2002, p. 6). Technology is “(a)n enabler of best work done anywhere, anytime ... supports high mobility” (Brill et al., 2002, p. 6). The increasing pace of work results in making employees feel that they are losing control of the pace of work, resulting in an increasing need for breaks. New workplace models are developed

based on business and work process analysis. The workplace is redesigned to “*purposively affect productivity and satisfaction*” (Brill et al., 2002, p. 8). The result is new physical solutions.

Wallace (2000) describes the four driving forces behind the new office design as:

1. Less time is spent working individually and more in teams. Private workspace is therefore getting smaller and more group areas are needed.
2. Working out of the office or telecommuting is increasing.
3. New communications technology allows for greater and faster changes.
4. Businesses are changing their philosophical models.

The new officing<sup>1</sup> has three basic strategies, namely radical redesign, work-from-anywhere, and hotelling (Brill et al., 2002).

### **1. Radical redesign**

This involves the discarding of old workplace standards and the development of new standards based on the analysis of the business and work processes. Redesign aims to support (Brill et al., 2002, p. 7):

- *‘Organisational transformation*
- *Changing work processes and practices*
- *Increased emphasis on effective group work*
- *Continuous learning*
- *Increasing the performance and satisfaction of individuals’.*

---

<sup>1</sup> A collective term used to describe the various evolving workspaces (in contrast with the traditional “office” concept).

## 2. **Work-from-anywhere**

Employees are able to work from home, at clients' sites, satellite work sites or virtual work at for example airports and hotel rooms. This can reduce the need for office space substantially.

## 3. **Hotelling**

The office is still the base but people who are generally out of the office 60 percent of their time or longer, share non-dedicated space which can be reserved. The workspace is the same size and quality as permanent offices but *'(s)ince no hoteller "owns" a workspace, materials are stored elsewhere'* (Brill et al., 2002, p. 9).

Jaunzens (1997, p 1) summarises the differences between the conventional and new ways of working which are presented in Table 2.7.

**Table 2.7 Conventional versus new ways of working**

	<b>Conventional</b>	<b>New</b>
<b>Patterns of work</b>	<ul style="list-style-type: none"><li>• routine</li><li>• individual tasks</li><li>• isolated</li><li>• 9 to 5</li></ul>	<ul style="list-style-type: none"><li>• creative</li><li>• group, project work</li><li>• interactive</li><li>• extended</li></ul>
<b>Occupancy</b>	<ul style="list-style-type: none"><li>• own desk/office</li><li>• low utilisation</li><li>• low density</li></ul>	<ul style="list-style-type: none"><li>• shared as needed</li><li>• high utilisation</li><li>• high density</li></ul>
<b>Settings</b>	<ul style="list-style-type: none"><li>• status based</li><li>• single setting</li></ul>	<ul style="list-style-type: none"><li>• task based</li><li>• multiple/varied settings</li></ul>

Definitions of new office design terminology are provided in Table 2.8 (Wallace, 2000, *insert*).

**Table 2.8 Definitions of *New Office* terminology**

<b>On-site office design options for individual employees</b>	
<b><i>Non-territorial</i></b>	<b><i>Territorial</i></b>
<ul style="list-style-type: none"> <li>• <i>Free-range or free address</i>: Workspaces available to anyone who gets there first.</li> <li>• <i>Hot-desking</i>: Movable and or quickly assembled individual workspaces.</li> <li>• <i>Hotelling</i>: Ideally for employees who only stay in the office for brief periods and where the ratio of employees to workspaces is 2 to 1 or higher.</li> <li>• <i>Hotelling free address</i>: See the “conciierge” for unassigned workspaces.</li> <li>• <i>Hotelling reserved</i>: For your “reserved” space and/or equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Shared assigned</i>: A single workspace is assigned to two or more employees for different times of usage.</li> <li>• <i>Permanent assigned</i>: Traditional assignment of one employee to one workspace.</li> <li>• <i>Cubicle</i>: Semi-enclosed workspace.</li> <li>• <i>Private office</i>: Enclosed workspace.</li> </ul>
<b>On-site office design options for teams or groups of employees</b>	
<b><i>Non-territorial</i></b>	<b><i>Territorial</i></b>
<ul style="list-style-type: none"> <li>• <i>Group address</i>: Dynamic team projects workspace.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Huddle spaces</i>: Areas for informal meetings.</li> <li>• <i>Learning spaces</i>: Interactive learning areas.</li> <li>• <i>Team spaces</i>: Large, open-plan group work areas.</li> <li>• <i>Permanent assigned</i>: Group workspace.</li> <li>• <i>Conference room</i>: Traditional designated group workspace.</li> <li>• <i>War room/videoconference room</i>: Non-traditional designated group workspace.</li> <li>• <i>Cave and commons</i>: Designed to accommodate need for individual concentration (small, enclosed workspaces are assigned) and team communication (one or more shared common areas are designated).</li> <li>• <i>Universal standard</i>: All employees are assigned the same size workstation or office.</li> </ul>
<b>Off-site office design options</b>	
<ul style="list-style-type: none"> <li>• <i>Home office</i>: Employee workspace at home.</li> <li>• <i>Virtual office</i>: Employee workspace is anywhere they are.</li> <li>• <i>Client site</i>: Employees who work at their clients’ site.</li> <li>• <i>Satellite or tele-centres</i>: Branch or support office in field.</li> </ul>	

## **The virtual office**

Duffy (as described in many of his publications for example Duffy, 2007: *Justifying Place in a Virtual World*) is a great proponent of the virtual office. Businesses operate seamlessly from multiple locations maintaining open-ended contacts. Professionals, for example do not only work in their offices, but also “*socially in restaurants, coffee house and even on busy streets – much as cities operated in the 18<sup>th</sup> century. ... As work spills out into the street, into homes, and airport lounges, the networked office transcends individual office buildings*” (Duffy, 2007, p. 130). Duffy is of the opinion that in two decades it would be difficult to understand the concept of a conventional 20<sup>th</sup> century office building (Duffy, 2007, p. 130).

The new workplace changes result in offices getting smaller, employees have less privacy and there are more visual and aural distractions (Wallace, 2000). The privacy and distraction issues are in direct contrast with the workplace qualities identified in the extensive study undertaken by BOSTI and described below (Brill et al., 2002). Wallace (2000) provides an example of an early attempt in 1994 for the *New Office* by the Chiat/Day advertising agency. An attempt to go paperless resulted in employees stashing files in the boots of their cars – regularly running out to retrieve them. Each day also started with a race to check out a laptop, a phone and a new place to sit. No-one was allowed to nest (sitting in the same place twice).

## **Required workplace qualities**

Based on six year’s (1994-2000) of research, including roughly 13 000 people in 40 business units Brill et al. (2002) identified the workplace qualities with the strongest influence on job satisfaction (ranked) (Brill et al., 2002, p. 19):

- *‘Ability to do distraction-free solo work*
- *Support for impromptu interactions (both in one’s workspace and elsewhere)*
- *Support for meetings and undistracted group work*
- *Workspace comfort, ergonomics and enough space for work tools*
- *Workspace supports side-by-side work and “dropping in to chat”*
- *Located near or can easily find co-workers*



- *Workplace has good places for breaks*
- *Access to needed technology*
- *Quality lighting and access to daylight*
- *Temperature control and air quality*'.

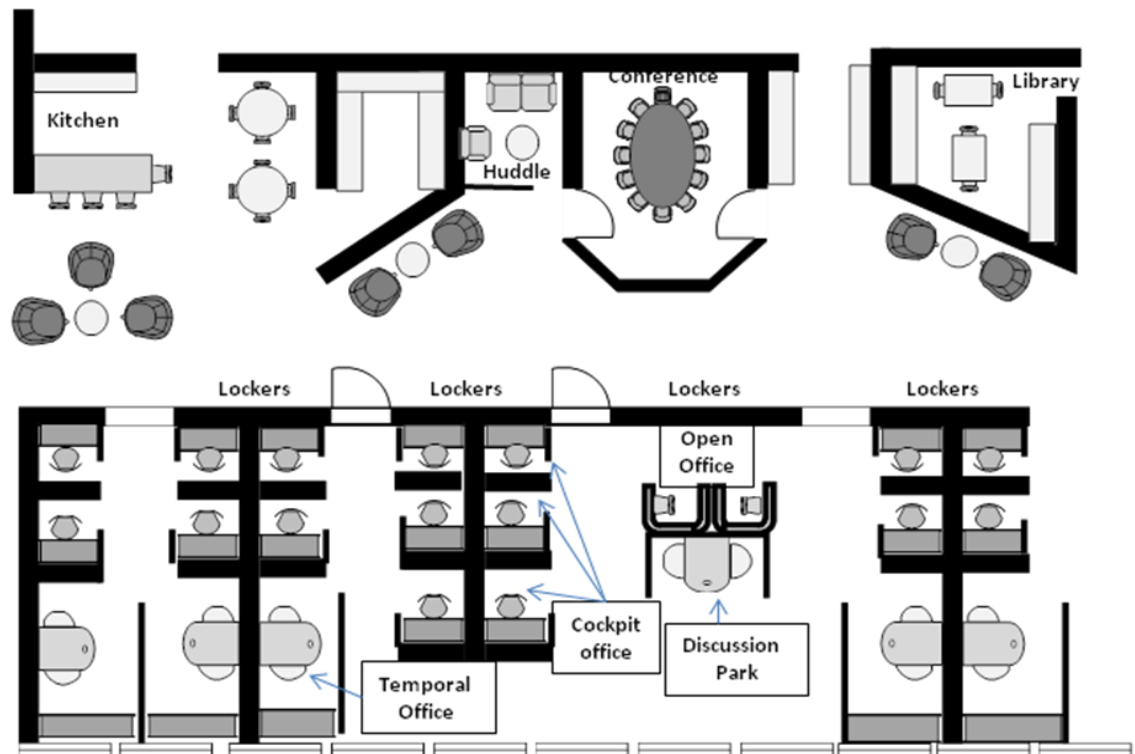
Brill et al. (2002, p. 20) estimates that improvements to address these workplace qualities, could yield at least a 3 percent improvement in individual performance and team performance. The influence of workspace improvements on job satisfaction can be felt in improved recruitment and retention (Brill et al., 2002, p. 20).

Brill et al. (2002, pp. 52-54) propose three office space design strategies to increase productivity and satisfaction by reducing distractions:

- Segregate individual workspaces from public and circulation spaces.
- Enclose each workgroup within sound-isolating walls, but provide the group with open office workspaces.
- Provide ceiling-high walls and doors for each individual.

An example of the layout taking the strategies above into consideration is presented in Figure 2.2 (Brill et al., 2002, p. 34).

**Figure 2.2 Main Street Plan**



As pointed out earlier, the *New Office* is not without controversy. Bjerrum and Bødker (2003) concluded, based on nine case studies, that knowledge sharing and learning are terms often connected with the new office, but it is often counterproductive to this purpose: “*It lacks places to dwell and return to, places to meet coincidentally, share artefacts and possibilities of leaving traces of current and past activities*” (Bjerrum & Bødker, 2003, p. 199). They attribute the problems to 1) problematic architecture, 2) insufficient technological solutions, 3) insufficient design processes, 4) actual needs of people in the organization are rarely considered, and 5) users are rarely involved in the design processes. Designs sometimes prevent learning instead of supporting it (Bjerrum & Bødker, 2003, pp. 211-212):

1. Focus on anonymous aesthetics.
2. Lack of corporate and personal identity in new office buildings.
3. Open spaces all the way through.
4. House rules (e.g. clean desks, not allowing employees to personalize space with for example photos and artwork).
5. Lack of concern for actual work and different needs.
6. Lack of mobile or movable technology.
7. Lack of concern for processes of design and implementation.

*“There is a tendency that new office designs are driven by architects’ more than by people’s need for dwelling and for showing their work and personality”* (Bjerrum & Bødker, 2003, p. 212). An important aspect to remember as Wallace (2000, par 23, *Caveat Emptor*) said *“(o)ne-size-fits all isn’t good design practice”*.

## **2.2. NEEDS IN THE PHYSICAL OFFICE ENVIRONMENT**

In the words of Lidwell et al. (2003, p. 106) *“(i)n order for a design to be successful it must meet people’s basic needs before it can attempt to satisfy higher-level needs”* – e.g. it must function before a higher-level need such as creativity can be addressed. A good design will progress and build on the lower levels of the hierarchy first: *“(g)ood design follows the hierarchy of needs principle, poor designs may attempt to meet needs from the various levels without building on the lower levels of the hierarchy first”* (Lidwell et al., 2003, p. 106). The author is of the opinion that one can argue that addressing these needs will add to the creation of a sense of place.

Both Lidwell et al. (2003) and Israel (2003) use a hierarchy of needs (as per Maslow) to describe the needs in the physical environment. The two needs hierarchies are approached from different angles, but are complementary and can be used in conjunction with each other. Where Israel’s needs are based on psychological needs, Lidwell et al.’s are based on design interaction needs. Both start off with basic needs – Israel with the need for shelter (safety and protection) and Lidwell et al. with the need for functionality (the design works). Both build a hierarchy of needs, the one aspect building on the previous, ending with self-actualisation (Israel) and satisfying creativity needs (Lidwell et al., 2003).

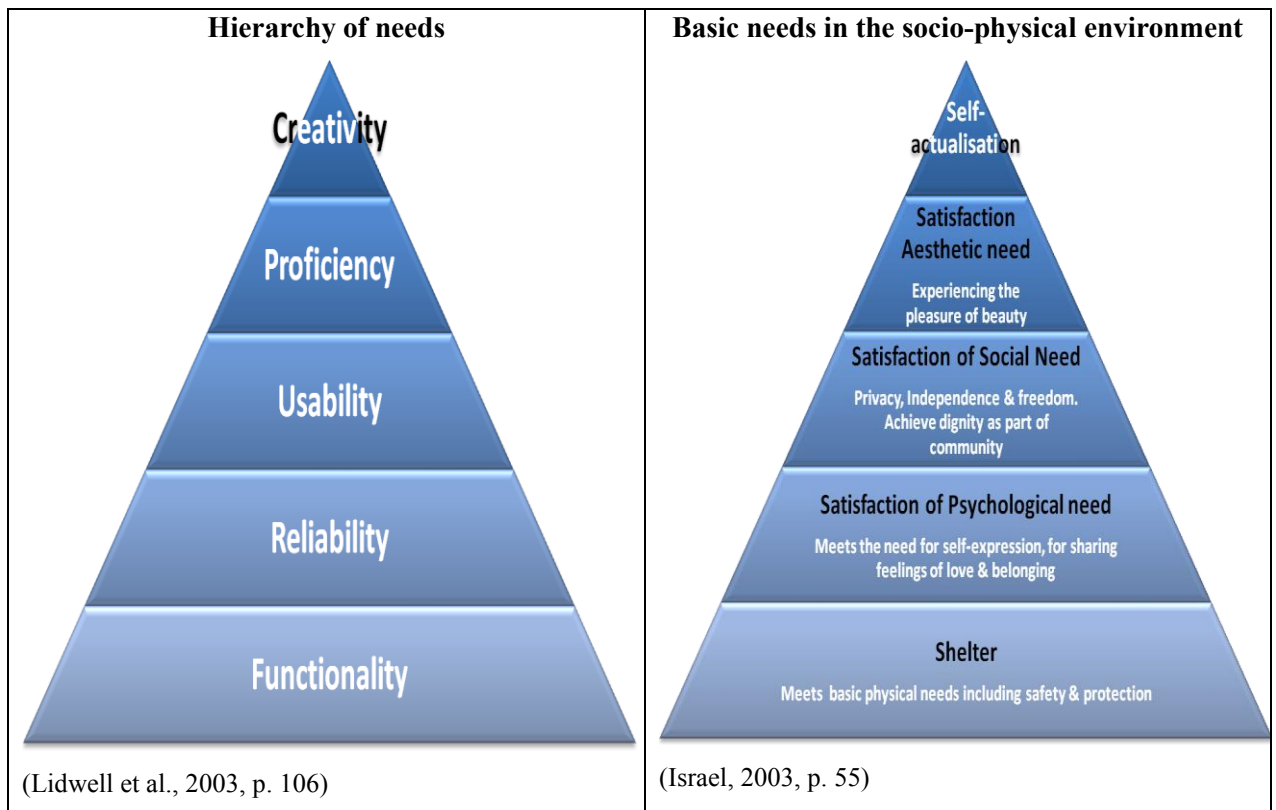
The Lidwell et al. (2003) and Israel (2003) needs’ hierarchies can be compared as follows:

**Table 2.9 Built environment needs**

<p style="text-align: center;"><b>Lidwell et al. (2003)</b></p> <p style="text-align: center;"><b>Needs</b></p>	<p style="text-align: center;"><b>Israel (2003)</b></p> <p style="text-align: center;"><b>Needs</b></p>
<p><b>Functionality (perceived to be of little or no value):</b> The design works. Meeting the most basic design requirements.</p>	<p><b>Shelter</b> Meets basic physical needs including safety &amp; protection.</p>
<p><b>Reliability needs (perceived to be of low value):</b> Establish stable and consistent performance. If design performs erratically or subject to frequent failure, reliability need not satisfied.</p>	<p><b>Satisfaction of psychological need</b> Meets the need for self-expression, for sharing feelings of love and belonging.</p>
<p><b>Usability needs (perceived to be of moderate value):</b> How easy and forgiving a design is. If difficulty too great, consequences of simple errors too severe, usability need not satisfied.</p>	<p><b>Satisfaction of social need</b> Privacy, independence and freedom. Achieve dignity as part of community.</p>
<p><b>Proficiency needs (perceived to be of high value):</b> Empowering people to do things better than they could previously. E.g. video recorder reeling out and recorded programs based on keywords is a significant advance.</p>	<p><b>Satisfaction of aesthetic need</b> Experiencing the pleasure of beauty.</p>
<p><b>Creativity needs (perceived to be of the highest value and often results in loyalty among users):</b> All needs have been satisfied and people begin to interact with the design in innovative ways. Aesthetic beauty, innovative interaction. Design is now used to create and explore.</p>	<p><b>Self-actualisation</b> Becoming more than what we are, it can come from peace, knowledge, self-fulfilment, realization of personal potential and growth</p>

Visually Lidwell's and Israel's need hierarchies are presented in Figure 2.3.

**Figure 2.3 Hierarchies of needs**



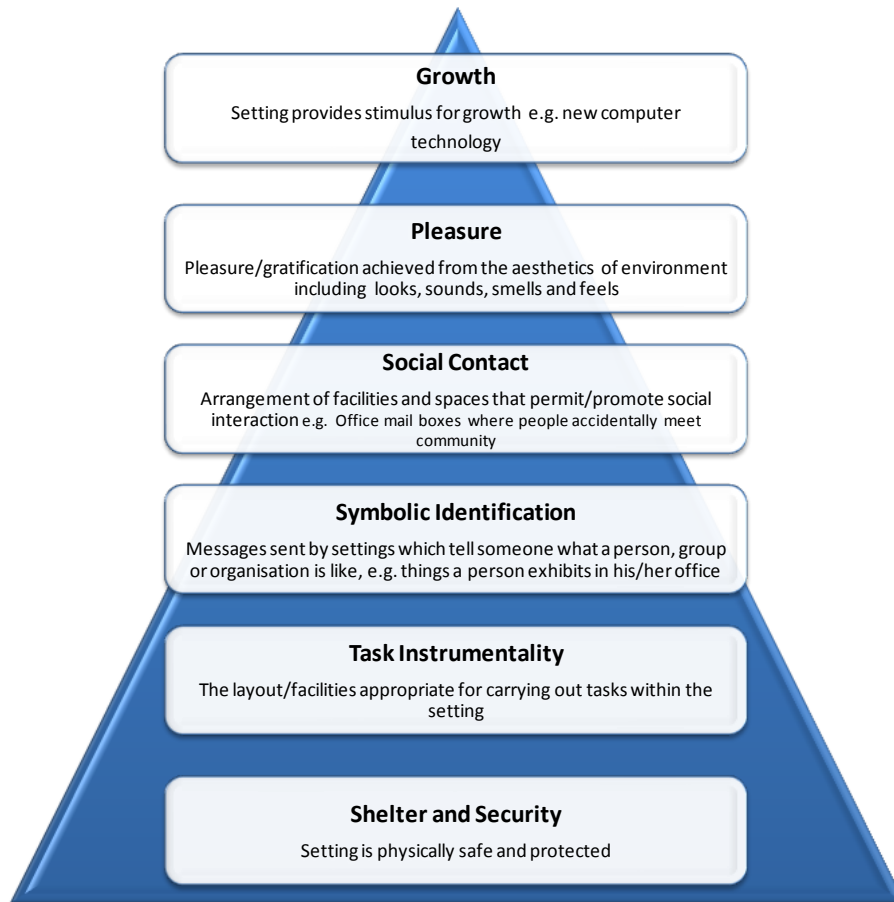
Apart from the needs to be addressed in the socio-physical environment, Israel (2003, adapted from Fred Steele), identified 6 functions organisations need to address to create an ideal socio-physical environment.

These functions follow the same pattern as Israel's hierarchy of needs starting with the most basic need of shelter and security progressing through to the growth function which lies on the self-actualization level. In designing any office environment it is important to ensure that all the needs are addressed through these functions. As indicated earlier (Lidwell et al., 2003) a good design progresses and builds on the lower levels of the hierarchy, with the implication that if one function is not fully satisfied, it will have a negative influence on the total experience of the design.

Currently in South Africa, addressing the safety and security on the basic level can be a challenge which can impact on the overall positive experience of a building/design. Israel's (2003) hierarchy of functions is visually presented in Figure 2.4.

## Figure 2.4 Ideal socio-physical environment: Functions to address

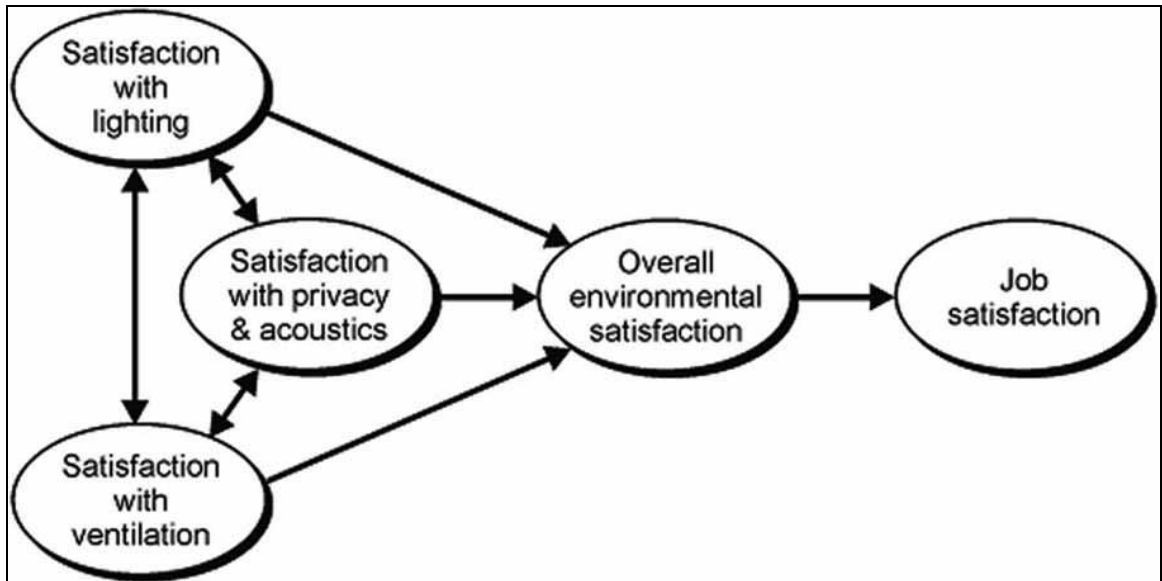
(Israel, 2003, p. 182)



### 2.3. THE INFLUENCE OF THE BUILT ENVIRONMENT ON ITS USERS

Various attempts have been made in the past and research projects have been conducted to illustrate or prove how satisfaction with the environment contributes to well-being. As an illustration one such attempt was the Cost-effective Open-Plan Environments (COPE) field study in 2007 using survey data from 779 participants in 9 buildings. Through structural equation modelling lighting, privacy, acoustics and ventilation were significantly linked to overall environmental satisfaction and in turn it predicted job satisfaction (Newsham, Brand, Donnelly, Veitch, Aries & Charles, 2009, p. 131). The resulting relationship model is provided in Figure 2.5.

**Figure 2.5 Relationships between environmental satisfaction and job satisfaction**  
(Newsham et al., 2009, p. 131)

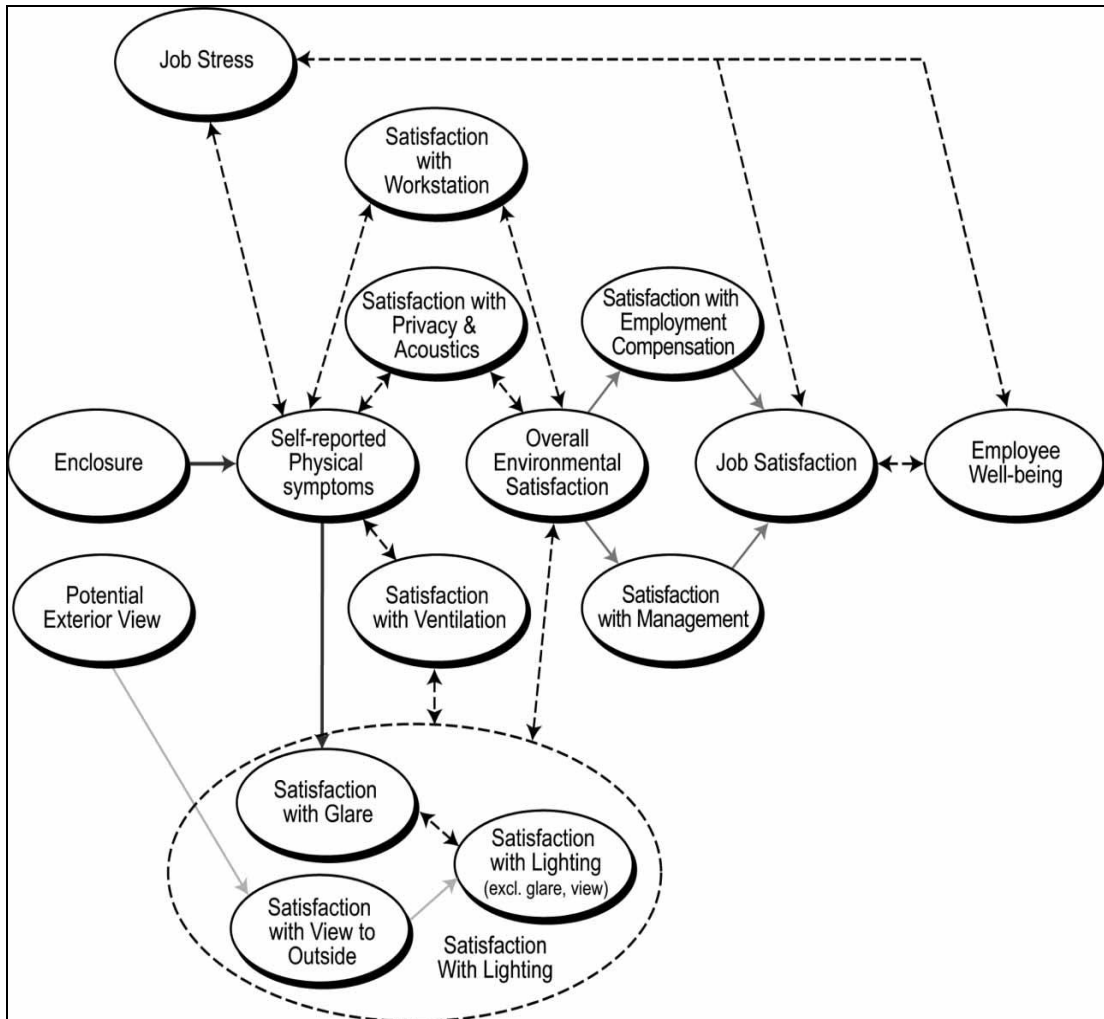


In a later study (Newsham et al., 2009), from data collected from 95 workstations at an open-plan office building, the previous model was confirmed and expanded, although not all possible aspects of organizational productivity were measured. A significant link was demonstrated between overall environmental satisfaction and job satisfaction, mediated by satisfaction with management and with compensation (Newsham et al., 2009, p. 1).

Newsham et al. (2009) concluded that:

- There was a relationship between lighting, privacy, acoustics, ventilation, workstation furniture and equipment and self-reported physical symptoms and job satisfaction.
- Overall environmental satisfaction significantly contributed to job satisfaction.
- Physical symptoms and job satisfaction could be predicted by job stress.
- The only physical aspect measured in this study was lighting. Window access was found to be a significant predictor of satisfaction with lighting. Satisfaction with glare increased with more furniture panels.

**Figure 2.6 Linking indoor environment conditions to job satisfaction: Lighting, privacy, acoustics, ventilation** (Newsham et al., 2009, p. 141)



Halpern, in his 1995 book *More than Bricks and Mortar? Mental Health and the Built Environment* investigated the relationship between **mental health** and the **built environment**. According to (Halpern, 1995, p. 1) there is “a widespread lay belief that the environment around us affects our mental health and well-being”. If the environment around us has an influence on mental health and well-being, the influence can be (Halpern, 1995, p. 2):

- As a source of stress;
- Through influencing social networks and support.
- Through social labelling.
- Through the planning process itself.



He concludes that although “... *the planned environment has at least some effect on mental health, it is difficult to put an exact figure on how large this effect is*” (Halpern, 1995, p. 206). He provides a number of reasons why it is difficult to find conclusive evidence that there is a causal relationship between mental illness and the planned environment (Halpern, 1995, p. 208). The reasons according to Halpern (1995, pp. 208-209) are:

**1. The small size of the effect**

Maybe researchers expect the effect of the environment on mental health to be very large. Although small, the effect can still be substantial.

**2. The influence of selection**

The occurrence of selection (the social and spatial sorting of individuals according to their preferences and abilities) has greatly complicated attempts to establish the causal relationship between mental illness and the environment. The causal interpretations of the results of very large numbers of studies (especially within psychiatric geography) are undermined by their failure to address the influence of selection adequately.

**3. The problem of response bias**

Halpern (1995, p. 208) defines response bias in this context as “*the tendency of individuals’ perceptions of the environment to be distorted by their mental state*”. Unless studies include “*objective independent measures of the environmental variables, the causal directions of the associations are difficult to establish*”.

**4. Poorly specified models**

The lack of theoretical models to guide research can give results that are contradictory and confusing (for example living alone can be as problematic as living in a high density area).

**5. Partialing fallacy**

The variance accounted for by the environment will be sharply reduced or even eliminated if a variable strongly associated with the environment such as income is statistically controlled.

**6. Fragmentation**

Various disciplines (e.g. psychiatry, social psychology, psychiatric geography, architecture and planning, sociology, criminology and environmental psychology) have knowledge that can enhance understanding. The lack of interdisciplinary cooperation/interaction “*has obscured many over-arching themes and insights*” (Halpern, 1995, p. 209).

The author is of the opinion that the same reasons should also apply to the relationship between well-being and the planned environment.

According to Halpern (1995, p. 205) mental health can be influenced by the environment via four channels. There is ...”*evidence that each of them can affect mental health to some extent ... the environment matters – (that) the design of houses, developments and cities have significant and demonstrable effects on the behaviour and well-being of the people who live in them*” (Halpern, 1995, p. 205). The four channels are:

**1. Environmental stress**

The planned environment can act as a source of stress. Examples of environmental stressors are pollution, noise, heat, certain weather conditions, and high social densities that could lead to negative mental states (irritation and annoyance). The source of stress may not only affect the mood, but can also tend to compromise patterns of coping behaviour. These stressors would typically be difficult to identify (e.g. pollution), difficult to control (e.g. share space with non-relatives) or involve personal threat such as crime (Halpern, 1995).

## 2. Social support

The physical environment is an important factor determining the form and character of relations. Close proximity of neighbours is a source of support and assistance. Positive social relations between neighbours can mediate the influence of environmental stressors, such as noise, density and fear (Halpern, 1995, p. 205). Large numbers of strangers and where people are forced into social interactions they cannot regulate is less conducive to the development of positive neighbouring relations (Halpern, 1995, p. 205).

Halpern (1995, p. 140) illustrates the relationship between the physical and social environment in the model in Figure 2.7. Supportive relations develop in an environment where the individual is in a position to regulate interaction and where the social environment is homogenous or there is at least the presence of a critical mass of similar others (Halpern, 1995, p. 140).

**Figure 2.7 A model of patterns of neighbourhood behaviour** (Halpern, 1995, p. 140)

		Physical Environment	
		Undermines regulation	Allows regulation
Social Environment	Heterogeneous	Conflict/ Withdrawal	Low Contact
	Homogenous	Conflict/ Withdrawal	Supportive Relations

Although Halpern's (1995, p. 205) examples were from a residential perspective, it is also applicable to the work environment. The design of the work environment has an influence on friendship and group formation which is a precursor to social support (Halpern, 1995, p. 117). In principle, these

friendships can offer a valuable source of support. Once groups are established, they are able to exert influence over members through the friendship network (Halpern, 1995, p. 119).

Halpern (1995, p. 117) quotes studies which illustrate the influence of the work environment on friendship and group formation:

1. Friendship among workers is closely related to proximity: the closer people work together, the more likely they are to become friends. But if people are “*sufficiently incompatible, then no amount of proximity will induce their friendship, underlining the importance of homogeneity*” (Halpern, 1995, p. 118).
2. The physical or symbolic enclosure of work groups facilitates friendship, group formation and cohesiveness, probably as a result of (Halpern 1995):
  - (a) Increased level of interaction.
  - (b) Privacy – the enclosure fosters autonomy and allows group norms to form.
  - (c) Cohesiveness makes it difficult for outsiders to be allowed into the group.

Cassidy (1997) reports that being able to control access to the self results in increased satisfaction and correlates positively with mental health.

Taylor (2006) quotes a number of studies (Buunk, Doosje, Jans and Hopstaken, 1993; Landsbergis, Schnall, Dietz, Friedman and Pickering, 1992; Repetti, 1993) indicating aspects which correlate with unsatisfactory social relationships at work:

1. Job stress.
2. Psychological distress at work.
3. Poor physical and mental health.

Unsatisfactory social relationships at work also results in reduced job satisfaction (Cooper & Marshall, 1976 cited in Taylor, 2006). The following

factors could be associated with higher levels of supportiveness and neighbourly interactions (Halpern, 1995):

1. The level of social homogeneity.
2. Older age.
3. Longer length of residence in an area.
4. Traditional working-class.

### **3. Symbolic aspects of the environment**

According to Halpern (1995, p. 206) “*there is suggestive evidence that symbolic aspects of the environment can affect mental health*”. In the residential environment Halpern (1995, p. 206) suggests that the first way in which symbolic aspects can affect mental health is that environmental labels often become self-fulfilling prophecies, and secondly “*through discrepancies between individuals’ aspirations and their perceived achievements*”.

### **4. The planning process**

Not participating in the planning process and therefore not being able to influence one’s own environment will more likely lead to decisions being experienced as unpopular and engender a sense of powerlessness and frustration (Halpern, 1995, p. 206).

Evans and McCoy (1998) developed a taxonomy identifying design elements which can influence mental health and thus could be used as a research guideline.

**Table 2.10 Interior design elements that may influence stress (Evans & McCoy, 1998, p. 92)**

<b>Stimulation</b>	<b>Affordances</b>
Intensity	Ambiguity
Complexity	Sudden perceptual changes
Mystery	Perceptual conflict
Novelty	Feedback
Noise	<b>Control</b>
Light	Crowding
Odour	Boundaries
Colour	Climatic and light controls
Crowding	Spatial hierarchy
Visual experience	Territoriality
Proximity to circulation	Symbolism
Adjacencies	Flexibility
<b>Coherence</b>	Responsiveness
Legibility	Privacy
Organisation	Depth
Thematic structure	Interconnectedness
Predictability	Functional distances
Landmark	Focal point
Signage	Sociofugal furniture arrangement
Pathway configuration	<b>Restorative</b>
Distinctiveness	Minimal distraction
Floor plan complexity	Stimulus shelter
Circulation alignment	Fascination
Exterior vistas	Solitude

## 2.4. IMPLICATIONS FOR PLANNERS

Day (2004) in his book *Places of the Soul. Architecture and environmental design as a healing art*, mentions various features of a healing environment: Day is an architect and sculptor who aims to create healing environments through his designs. The healing features according to him are:

1. Harmony between materials and colours.
2. Simplicity.
3. Silence.
4. Balanced proportions.
5. Texture for light to play on.
6. Timelessness.
7. Slight variations and ambiguities of form.
8. The use of unobtrusive and gentle textures.
9. Curves are restful and unobtrusive.
10. Use colour to enhance the mood.

In a conclusion Halpern (1995, pp. 211-213) gives the implications of the research presented in his book for planners. His conclusions can be summarized as follows:

1. Certain kinds of environmental stress such as air pollution, extreme temperatures, noise, high density and crime are experienced as unpleasant by most people most of the time. People find certain types of environmental stress such as air pollution difficult to identify.
2. The impact of stressors depends on and is mediated by a range of social factors. For example, the impact of density depends on the nature of the relationships between the people sharing the space: density per se does not affect mental health, but not having a cooperative relationship with the people you have to share with may have a negative impact. It is therefore difficult to draw up simple guidelines regarding acceptable levels of these stressors.
3. There is not necessarily a direct correlation between the level of people's complaints and the negative impact of an environmental stressor.

4. The design of an environment may have an impact on the occurrence or prevention of burglaries, attacks and vandalism (see paragraph 4.1.1).
5. Having the ability to control the environment may greatly reduce the negative impact of environmental stressors.
6. Being able to regulate interactions with co-workers mediates the impact and quality of people's relationships. It may result in relations turning sour, hostility, withdrawal and loneliness. *“Environments which encourage and facilitate social contacts between neighbours will not necessarily lead to positive social relations between neighbours”* (Halpern, 1995, p. 212).
7. Semi-public spaces which employees can choose to use or not and when or when not, may facilitate and encourage social interactions and increase the positive influence of neighbourly support.
8. *Homogeneity in terms of social class, ethnicity, demographic profile and land use appear to offer significant benefits on the local level in terms of the relationships between neighbours and residents' mental health.* (Halpern, 1995, p. 213).

## **2.5. SUMMARY**

The physical set-up of offices has changed dramatically over the past two centuries. An important change agent is technological advancements. Because of technological advancements office work can become more mobile now and work anywhere, anytime is a reality. Ironically these advancements actually take office work back to where it began – in houses, in coffee shops etc.

Whether the built environment has an influence on well-being of users or not, is difficult to prove or disprove, although there are clear indications that it has an influence on its users. There are certain design aspects which designers should pay attention to which could improve the health giving properties of the environment.

In the next chapter office design principles and philosophies will be discussed.



## Chapter 3

### 3. OFFICE DESIGN PRINCIPLES AND PHILOSOPHIES

*"The greater the tension, the greater is the potential. Great energy springs from a correspondingly great tension of opposites."* from *Alchemical Studies*, Jung, 1942

#### 3.1. THE DESIGN – USER CONFLICT

Smith and Stewart (2006) are of the opinion that environmental psychology is often overlooked or little consideration is given to it for the sake of locating electrical and data outlets. The author is of the opinion that spaces are first and foremost designed for people, and universal principles of which *feng shui* is an example should be used to enhance our lives and productivity. *"(U)ltimately the most fulfilling buildings are those which embody the designer's and dweller's fully expressed self"* (Israel, 2003 p. 162).

Stewart in Smith and Stewart (2006, p. ix) describes how she as a first year architect was welcomed by *"(if there's anyone here who wants to design a building that looks like a Swiss chalet, Greek temple, or Italian villa, you should leave right now. You're here to open your minds and create architecture for the future ..."*. For Stewart it made sense at the time, but now she regards it as a questionable approach of designing space for real people whose basic needs remain constant, regardless of the time period (Smith & Stewart, 2006). She continues that no one questioned that there is something that feels comfortable about living in a Victorian house or vacationing in an Italian hill town. According to Andres Duany in an interview with Toby Israel *"They (architectural professionals) are interested in whatever is the latest thing and that does not come from within. It's about surface"* (Israel, 2003, p. 150). *"They are trained in architecture school in aesthetics and technology ... the whole human part is left out"* (Israel, 2003, p. 142).

Sometimes *"pointless flamboyance"* is caused by *"waste and inefficiency"* and sometimes architects want to add *"something flashy"* to their portfolio and *"corporate clients, eager for an impressive and noteworthy addition to the skyline, may pay tens of millions of dollars for the architectural equivalent of tail fins. Then the designers*

*go home, feeling artistically gratified, and the client moves in and begins to discover problems. Department A is too far from Department B. Office layouts aren't as sensible as they could be. Business needs aren't supported very well"* (Obata, 1987, p. 57).

According to Smith and Stewart (2006, p. 138) *feng shui* is all about making people comfortable whatever the design style, *"not to create a dramatic space that will photograph well for a brochure or Web site"*. By applying *feng shui* principles the number of stressful details should be reduced which would make inhabitants calmer and happier (Smith & Stewart, 2006).

*"It teaches that we need to surround ourselves with the energy, balance, and harmony found in nature to lead healthy and productive lives. Its basic premise is that we encounter daily (consciously and subconsciously) hundreds of details that can make us tense and uncomfortable"* (Smith & Stewart, 2006, pix).

*Feng shui* design begins by understanding the human need for *"nature"* and focusing on creating the best environment for the mental and physical health of the person who will live and work in the space - the people are much more important than the building (Smith & Stewart, 2006). They continue by stating that there is nothing trendy about designing buildings that are good for people. Brill, Margulis, Konar and BOSTI (1984, Vol 1, pp. 16-17) quote Peter Blake (an architectural editor, educator and critic at a meeting in 1981) as saying that there is a split between those that regard architecture as a High Art and those that judge architecture according to how well it performs. He is of the opinion that most architects think of themselves as engaging in High Art and most consumers of architecture judge architecture according to its performance.

According to Israel (2003), Herbert Gans (an urban sociologist in his 1974 book “*Popular Culture and High Culture: An Analysis and Evaluation of Taste*” [revised in 1999]), provided an important socio-cultural perspective on notions of beauty, taste and style. He identified five publics or cultures which form the basis of a taste structure hierarchy, namely (Israel, 2003, p. 115):

- **High Culture** – the emphasis is on construction of a work of art. According to (Israel, 2003, p. 116) proponents of high culture think they provide the “proper” culture for the rest of society. High culture includes creators and critics.
- **Upper Middle Culture** – not concerned with form, borrow from and alter high culture. Includes upper middle class professionals whose “*fashionable photograph-filled art books may be casually though purposefully displayed to signal their sophistication*” (Israel, 2003, p. 116).
- **Low Middle Culture** – America’s dominant taste culture with a preference for romantic and representational art. Teachers, accountants, etc. who value traditional morals and values are included in this culture.
- **Low Culture** – Culture and abstract ideas or abstract art are for example rejected - they prefer ornateness (Israel, 2003, p. 116). Skilled and semi-skilled factory and service workers are included in this culture.
- **Quasi Folk Culture** – This culture includes poor, unskilled workers who are ignored by society at large and not catered for by the mass media. According to (Israel, 2003, p. 116) they find expression in for example church and street festivals.
- **Fringe Culture** – Youth, minority cultures relying on alternative traditions and expressions (Israel, 2003, p. 116).

Gans’s work is descriptive and expresses no value judgement (Israel, 2003, p. 116). According to Israel (2003, p. 117) architects’ and designers’ personal taste may be a composite of different influences: for example they are trained in the tradition of “*high art*” but they may be from backgrounds and cultures that represent “*lower*” taste cultures. To resolve the conflict, design students are taught to reject low culture as “*bad*” taste’ (Israel, 2003, p. 117). Dwellers can be confronted with similar conflicts: they may cling to familiar or traditional taste patterns or, in order to appear more

fashionable, reject taste they actually feel comfortable with. According to Gans, certain works appeal to all taste cultures (Israel, 2003, p. 117). Frank Lloyd Wright was one of the few architects who succeeded in combining aesthetics, social/cultural language and personal input to create universally liked buildings and his famous architectural design Fallingwater is an example (Israel, 2003, p. 119).

Referring to design in general, Lidwell et al. (2003, p. 170) state that sometimes it is preferable to settle for a satisfactory design rather than the best design. The satisfactory design will be determined by knowledge of design requirements as well as knowledge of the value perceptions of the users. According to Day (2004, p. 1) “(a)rchitects tend to think architecture matters. Not everyone else does. To many people buildings are expensive, but not very interesting. It’s what goes on inside that matters”.

De Botton (2006) gives the example of the early 20<sup>th</sup> century French architect Le Corbusier that supports Smith and Stewart’s (2006) latter statement. The inhabitants who actually had to use the buildings were not a priority to him. Le Corbusier even reacted negatively when one client wanted to fit an armchair and two sofas in the living room as he was of the opinion that the notion that one must have furniture should be rooted out (De Botton, 2007). One of his buildings (Villa Savoye) is currently still regarded as his most influential building ([http://en.wikipedia.org/wiki/Villa\\_Savoye](http://en.wikipedia.org/wiki/Villa_Savoye)) and is still studied today, but the building was barely habitable (or as Madame Savoye said according to De Botton [2007]: “*uninhabitable*”). The very badly leaking roof was not sorted out from 1929 until the owners fled France during World War II and Le Corbusier was saved from a court case (De Botton, 2007).

Buildings not only need to meet our basic need for shelter and security as well as psychological and social growth, but ideally should also satisfy our aesthetic needs. Israel (2003, p. 115) reports that Maslow was of the opinion that some people have more of an aesthetic need and “*they literally become sick when surrounded by ugliness and become well when their environment is beautiful*”. To complicate the matter, beauty not only lies in the eye of the beholder, it also exists within a social and cultural context (Israel, 2003). Beauty and the philosophy of it is the subject of many

books. For example the well-known philosopher and semiotician, Umberto Eco, wrote a number of books on the subject: *The Aesthetics of Chaosmos: The Middle Ages of James Joyce*, 1989; *The Aesthetics of Thomas Aquinas*, 1988; *Art and Beauty in the Middle Ages*, 2002; *On beauty: A history of a Western Idea*, 2004 and *History of Beauty*, 2004; *On ugliness*, 2007.

It is important to note that “*buildings that are good for people*” are not static. There is continuous research regarding Sick Building Syndrome and Ergonomics, with results being published all the time requiring flexibility and adaptability in design. Apart from new research information that needs to be incorporated into design, beauty is not only highly subjective but also depends on trends, culture and personal experience (Bourassa, 1990). According to Kopec (2006) both utilization needs and aesthetic qualities need to be taken into consideration in design. He gives the example that furniture can contribute to the overall décor and at the same time create the illusion of space. But, “*if the furnishings are not suitable for the intended users then the environment has failed its primary purpose of supporting human habitation*” (Kopec, 2006, p. 59) – “*(p)lanners and designers should create environments that are both pleasurable and functional*” (Kopec, 2006, p. 85). He continues in stating that the average person is motivated by convenience and functionality and the designer is motivated by an artistic nature and therefore the incongruity can lead to conflict (Kopec, 2006, p. 59). Apart from this, the average person prefers symmetry because of the appearance of balance, whereas designers tend to prefer asymmetry because of the artistry (Kopec, 2006, p. 51).

Brill et al. (1984, Vol 1) argues that many architects and interior designers claim that they base designs on their understanding of human behaviour and organizational goals. However, most designers have a limited understanding of people’s behaviour as the behavioural research community and few designers actually seek to systematically gather information about the intended users, not pre- or post-occupancy (Brill et al., 1984, Vol 1, pp. 15-16).

Smith and Stewart (2006, pp. *x-xi*) give a few examples how designers or architects would differ from *feng shui* consultants on design aspects. The following illustrates the differences in thinking:

**Table 3.1 Comparison designer and *Feng Shui* design thought processes**

<b>Designer</b>	<b><i>Feng shui</i></b>
Might consider complex volumes and an off-centre entrance.	Humans feel most comfortable in complete shapes and that the major entrance should be centred on the most important elevation because balance is important. (Classical buildings are also built based on this principle.)
Lobby paving patterns are often a graphic exercise to reinforce the overall design concept or the lobby geometry.	The paving pattern should subconsciously and smoothly direct the energy flow of people to their destination e.g. an information desk or the elevators.
<b>An office door is at the end of a long straight corridor.</b>	
“Accent wall.”	“Too much energy/ch’i rushing towards the occupant.”
<b>The headboard of the bed is against a bathroom plumbing wall.</b>	
“Potential acoustic problems.”	“The imbalance of water energy can affect your health.”
<b>Rooms with very dark ceilings and very light floors.</b>	
“Light and airy.”	“The balance of nature: light sky, medium forest and fields, and dark earth.”
<b>Master bathroom with a small north facing window, blue fabric wall covering, brown tiles and carpet, and oil-rubbed bronze fixtures.</b>	
“Dark and drab.”	“Too yin.”

Complicating the issue is the number of stakeholders involved in using and producing buildings (Canter, 1974). According to Canter (1974) the following stakeholders are involved and often have conflicting or incompatible needs (inter alia):

- Financing companies (concerned with economics).
- Developers (concerned with ease of letting and saving money).
- Managing agents (concerned with ease of administration and security).
- Local authorities (concerned with rules and regulations).
- Users of a building (for example employees and visitors).
- Passers-by.

The occupants are, according to Pinder, Price, Wilkinson and Demack (2003), the true end users of office buildings. Managers and executives are important stakeholders

who would not necessarily be occupants of the building. To this list should be added designers and architects (inter alia concerned with aesthetics) (Gray & Tippett, 1993).

Maybe the most poignant difference between *feng shui*, architecture and Design Psychology approaches is the role of the inhabitant:

- In *feng shui* the geomancer possesses information or knowledge that is mystical and not known to mere mortals.
- In architecture (according to Gans's cultures) the architect is the custodian of "high culture" and again mere mortals familiar and comfortable with low and middle culture are not privy to the high culture insights. In both these cases the privileged knowledge protects the geomancer and architect's superior position.
- In contrast, the inhabitant's input is pivotal in the Design Psychology process.

According to Cassidy (1997) by involving all interested parties in the design process, one makes sure that all needs will be met, social cohesion and support will increase and users will be empowered.

According to Keedwell (n.d.) the way users have been accommodated in the design processes through the decades have changed:

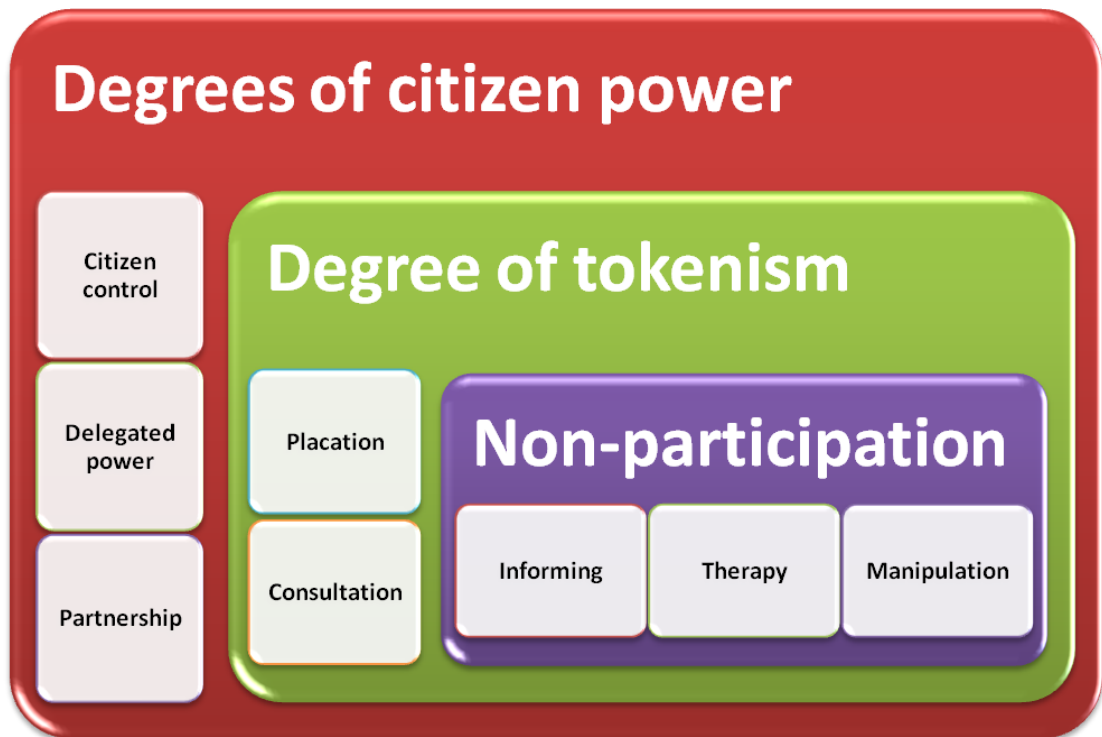
- Early modernists tried to find technological solutions to design and users were by-passed.
- The planners of the second half of the 20<sup>th</sup> century accommodated user's needs, but tended to generalize their needs and therefore failed to create a "sense of place".
- In the latter part of the 20<sup>th</sup> century Environmental Psychology tended to apply research results to whole populations, ignoring differences between groups and subgroups within groups.

According to Israel (2003) research shows that although employees who participate in design decisions have higher job satisfaction and satisfaction with their environment, usually only managers and supervisors participate in design decisions with fewer than five employees participating.

Being involved or according to Israel (2003) at least exposed to the design process will result in a deep psychological connection (Israel, 2003, p. 204). *“Because the success of a building depends primarily on how well people are able to work and live within it, the best designs begin from the inside out”* (Obata, 1987, p. 57). But, Lidwell et al. (2003, p. 150) point out that input obtained from users can be unreliable, especially for new or unfamiliar designs.

The degree of involvement can be illustrated as follows (Israel, 2003, p. 235):

**Figure 3.1 Degrees of design involvement**



A few authors, mostly from the field of Design Psychology, give examples of frameworks they use to obtain inhabitant’s inputs in the design process. Toby Israel describes in her book, *“Some Place Like Home”* (2003), a process she has designed to obtain the input of the various stakeholders in order to design.

According to Israel (2003) the advantages of the Design Psychology process are:

- It helps to focus the stakeholders (inter alia client and the architect).
- It provides a strong foundation to build a solid design on.



- It saves time because it clarifies processes, needs etc.
- It offers an added-value service that architects can use to market services and win contracts.
- It is inspirational in terms of the final design and is also professionally and personally meaningful.

According to Toby Israel's (2003) design process to obtain stakeholder input, the first step is to identify and draw relevant stakeholders together. Both the client/user and the designer need to be involved in any Design Psychology process and genuine participation rather than tokenism is encouraged. According to Israel (2003) the particular project will determine the nature of the client/user participation and the designer/client relationship. Israel (2003) proposes the following general steps to be followed:

- explore past history of work environments;
- identify the "highest positive" associations they had with those past work places;
- use these "high positive" to help envision their "ideal" work place environment;
- recognize and articulate the pyramid of functional, psychological, social, aesthetic and growth needs to be addressed by the work place design; and to
- use the hierarchy (see paragraph 2.2) to express those needs to the designer for them to be translated into a fulfilling work place designs.

Below is a summary of Israel's (2003, p. 211 and p. 214) Design Psychology tools used in the design process.

**Table 3.2 Design Psychology tools**

Steps	Agenda	Process	Tools
<b>Programming</b>			
<b>Step 1:</b> Explore past history of place	<b>Session 1: The Vision</b>	Discuss the mission and characteristics of the project. Establish general project goals and objectives. <b>Tool 1</b> Formulate the vision of “ <i>Whole-Place Vision</i> ” to be supported by design. Compare “ <i>Whole-Place Vision</i> ” with the mission, goals, and objectives of project. Finalise “ <i>Whole-Place Vision</i> ” statement.	<i>1. Workplace Timeline Exercise</i>
<b>Step 2:</b> Identify “ <i>high positive</i> ” associations with past place		<b>Tool 2</b> Can be too personal – maybe only appropriate in groups that are very open and innovative. Can use both Place Timeline and/or Place Family Tree.	<i>2. Workplace Family Tree Exercise</i>
<b>Step 3:</b> Use “ <i>high positives</i> ” to envision ideal design	<b>Session 2: Shelter and Security/ Functional Needs</b>	Establish space requirements and adjacencies to support the “ <i>Whole-Place Vision</i> ”. <b>Tool 3 and 4</b> Identify opportunities and constraints of design of site, interior layout, etc. in order to support “ <i>Whole Place</i> ”.	<b>Functional Needs</b> <i>3. Ideal Workplace Exercise</i> <b>Shelter and Security</b> <i>4. Mental Map Exercise</i>
<b>Step 4: Climb the Pyramid</b>	<b>Session 3: Social Contact: Organisation of People and Places</b>	Refine the desired adjacencies and criteria for organising of programmatic elements. Develop design ideas for interior layout. <b>Tool 5</b> Refine interior layout Review/Refine final programme document.	<b>Social Contact</b> <i>5. Environmental Sociogram Exercise</i>

**Table 3.2 Design Psychology tools (continued)**

Steps	Agenda	Process	Tools
<b>Schematic design</b>			
	<b>Session 4: Place Identity: A Sense of Place</b>	Review floor plans Review preliminary cost priorities. <b>Tool 6</b> Develop design concepts that affect the exterior and interior of the building.	<b>Identity</b> <i>6. Organisational Personality Exercise</i>
	<b>Session 5: Place Aesthetics</b>	Review elevations. Establish final budget and project phasing. <b>Tool 7 and Tool 8</b> Establish final budget and project phasing.	<b>Aesthetics</b> <i>7. Taste Cultures Exercise (see Gans paragraph 3.1)</i> <i>8. Workplace Visualisation Exercise</i>
	<b>Session 6: Parts Equal the Whole</b>	<b>Tool 9</b> Confirm final layout of the floor plan, building footprint and potential phasing. Plan detailed interviews regarding every room of the project.	<b>Growth</b> <i>9. Actualised Place Exercise</i>
<b>Step 5: Translate vision into fulfilling design</b>			<i>Schematic and final design completed by designer.</i> Using the hierarchy (see paragraph 2.2) to translate the vision into a fulfilling design.

Below are more details about the tools referred to in the table above (Israel, 2003, pp. 166-208, pp. 209-214):

**Tool 1: Workplace timeline**

Create a timeline of workplace environments experienced and identify “*highest positive*” associations with previous workplaces.

**Purpose:** Create a design as positive and memorable as those participants had experienced.

**Tool 2: Workplace family tree exercise**

Use nouns or adjectives to describe the work, work values and workplaces ancestors experienced.

**Purpose:** Identify patterns from the past that may have influenced work and workplace perspectives and values.

**Tool 3: Ideal workplace**

Recall a favourite workplace from the past - recall seeing, smelling, touching, hearing or tasting there.

**Purpose:** To take the best of the personal workplace ideal that participants articulated and combine it with the most authentic aspects of the public image of the company to come up with a “whole/actualized-workplace” vision.

**Tool 4: Mental map**

Draw a map of a memorable workplace setting or of the project’s setting/context (e.g. a mental map of the entire office layout and/or own workstation layout).

**Purpose:** To address or incorporate the most positive aspects of the memorable setting.

**Tool 5: Environmental sociogram exercise**

Once the floor plan is completed by the designer, the participants indicate the public, semi-private and private spaces on the floor plan. To what extent is the division between the spaces equal and satisfactory?

**Purpose:** To what extent do the new floor plans meet needs in terms of social contact - the desired balance between openness and privacy?

**Tool 6: Organisational personality**

Israel (2003) uses the “Organisational Character Index” (from the book “*The Character of Organisations: Using personality type in organisation development*” by William Bridges). Participants are required to describe the personality or group identity they want the design to reflect and if it is an existing design, what matches the current design and what is not reflected.

**Purpose:** To match the personality of the organization/users and the sense of place to be designed.

**Tool 7: Taste cultures**

Designers, clients and users each indicate the taste culture (according to the taste culture of Gans – see paragraph 3.1) they identify with.

**Purpose:** To establish each person's taste culture. Recognizing the difference in specific taste cultures which may influence our taste and style can address diversity and cultural inclusion.

**Tool 8: Workplace visualization**

Participants visualise and draw the newly designed place focusing on for example shapes, colours, textures, objects, furniture, lighting, the way people occupy the new space.

**Purpose:** The designer considers the input in terms of the aesthetics of the new space.

**Tool 9: Actualised place**

Once the design is almost finalized, determine how close the design is to the envisioned actualized “Whole-Place” by comparing it with the hierarchy of needs (see paragraph 2.2).

Cassidy (1997, p. 171) explains the role Environmental and Design Psychology should play in the various design stages, namely:

1. Programming – identifying needs and give specific design guidelines.
2. Design stage – integrating information from the programming stage into the design.
3. Construction stage – only give an input if changes need to be made.
4. Usage stage – establish whether adaptation to new environment has taken place.
5. Evaluation stage – post-occupancy evaluation, organisational climate surveys, measuring changes in behaviour.

### 3.2. ENVIRONMENTAL RESPONSE AND EVALUATION

According to Cassidy (1997) people respond to the environment in three ways, namely in terms of environmental perception, environmental appreciation, and environmental personality.

1. **Environmental perception:** How we actually perceive the environment and the context of social and physical elements.
  - a. We obtain clues and information from the environment which we use in perceptual process.
  - b. The environment shapes our perceptual memory in the developmental process.
  - c. Based on point b, we select, interpret and give meaning to the information we receive. We construct our own environment overriding the “objective” environment.
2. **Environmental appreciation:** How we evaluate and feel about our environment.
  - a. A certain level of complexity and stimuli will optimize satisfaction, i.e. if an environment is highly coherent, easily legible and simple it can result in dissatisfaction, but the opposite of having a confusing, overly complex environment lacking coherence can also result in dissatisfaction.
  - b. The optimum level is determined by personal experience.
3. **Environmental personality:** The notion is that relatively stable personality traits exist, explaining different responses to environments. Gifford (1987) identified eight environment personality traits, namely:
  - a. Pastoralism – prefer open spaces and self-sufficiency
  - b. Urbanism – enjoy high density living, appreciate varied interpersonal and cultural stimulation found in cities
  - c. Environmental adaptation – favour the alteration of the environment to suit human needs and desires, oppose developmental controls and prefer highly refined settings and objects
  - d. Stimulus seeking – interested in travel and exploration, enjoy complex or intense physical sensations, have very broad interests

- e. Environmental trust – secure in the environment, competent in finding way around, unafraid of new places or being alone
- f. Antiquarianism – enjoy historical places and things, prefer traditional designs, collect treasured possessions, appreciate products of earlier eras
- g. Need for privacy- need isolation, not appreciate neighbours, avoid distraction and seek solitude
- h. Mechanical orientation – enjoy technological and mechanical processes, enjoy working with hands and care how things work

### **Evaluation of the physical environment**

A number of aspects play a role in the evaluation of the physical environment. Pinder (2003) attempted to group the aspects and it can be summarised as follows:

1. **Measuring/evaluating workplace utility:** Relative conditions are easier to evaluate than absolute conditions e.g. it is easier to compare the conditions of two buildings than evaluating it in isolation.
2. **Significant aspects:** Some aspects are easier to assess and perceive than others e.g. aesthetics is easier to assess than air quality.
3. **Knowledge and past experience:** Knowledge of the building and past experience with the building and other buildings can influence perceptions and assessment.
4. **Level of involvement:** Different stakeholders (e.g. occupants and visitors) focus on different aspects in a building and experience the building differently.
5. **Social context:** Group consensus will play a role in perception and evaluation. For example if a building has a poor reputation, it is likely to be perpetuated. If a perception is formed in isolation without this knowledge, the perception and evaluation may be different.
6. **Tastes and fashions:** Current tastes and fashion influence perceptions and evaluations.

Pinder (2003) continued by identifying and describing four dimensions which can be used to measure workplace utility (a function of usefulness, the expectations and perceptions of a building's users). The four dimensions are:

1. **Configuration issues:** e.g. area of informal meeting space, potential for chance interaction and ease of circulation.

2. **Environment variables:** e.g. adequacy of ventilation, degree of individual control of temperature and responsiveness to changes in temperature.
3. **Appearance of the office building:** e.g. modernity of interior areas, extension appearance and tidiness.
4. **Functionality of the building:** e.g. level of conversational privacy, adequacy of workspace, potential to work free from distraction.

### 3.3. **FENG SHUI: BACKGROUND AND HISTORY**

*Feng shui* is a Chinese term literally meaning “*Wind and Water*” (Collins, 2003): “*Wind being the overhead physical manifestation of the fluid mutable state of all things and water representing the fluid state of living on earth*” (Grant, 2006a, p. 78). Wind and water are two of the most fundamental forms of life’s energy - without water and air humans will soon die (Chuen, 1995). According to Collins (2003) *feng shui* predates Confucianism and Taoism and has been practiced in China for over 3 000 years. Murray (2001), however, reports that *feng shui* has been practiced for 7 000 years and is based on Taoist teachings. The underlying philosophical principle is similar, as is illustrated in the words of O’Connell & Airey, (2007, p. 38): “*(t)aoism is ... concerned with living in accordance with the nature of things as they are*”. Smith and Stewart (2006) place the development of *feng shui* at between 4 000 and 5 000 years ago in the small villages in the north of China. The earliest known records of *feng shui* are from south western China during the Han Dynasty (200 B.C. to 200 A.D.) (<http://www.fengshui.co.uk/FengShuiHistory.htm>). *Feng shui* has since spread to other countries such as Japan, Malaysia, Singapore, Philippines, Vietnam, Laos, Thailand and Korea. Although the basic concept stays the same, the name may change in the new area, for example in Korea it is known as *Poony soo jiri* (Hobson, 1994) and the Indian version is *Vaastu Shastra* (or *Vastu Shastra*) (Diamond, 2004).

*Feng shui* is based on the premise that people are affected by their environment and it unites ancient beliefs with “*space planning, interior design, ecology, psychology and common sense*” (Lagatree, 1997, p. 26) or in the words of Diamond (2004, p. 7) *feng shui* is based on laws of physics, natural cycles, common sense and good design. This is obviously a more westernised interpretation and can be contrasted with Lai Chuen Yan’s (in Hobson, 1994) more complex description that *feng shui* is a mystical



combination of Chinese philosophical, religions, astrological, cosmological, mathematical and geographical concepts. According to Blode (the director of the Colorado Chapter of the *Feng Shui* Guild in Boulder): “(w)e’re in partnership with our environment, but we’ve gotten so busy and our society moves so fast, we’re losing sight of that. We know we’ve left something behind as we’ve evolved and feng shui helps us bring our souls back into our spaces” (Bohland, 1999, p. 45).

Rossbach (in Hobson, 1994, p. 21) described the roots of *feng shui* and noted:

*“The Chinese saw a magical link between man and the landscapes. Nature reacts to any change and the reaction resounds in man. They saw the world and themselves as part of a sacred metabolic system. Everything pulsed with life. Everything depended on everything else. The Chinese felt that they shared a fate with the earth. When it was healthy and prospered they thrived, when the balance was destroyed they suffered”.*

Or in the words of Webster (1998, p. 1):

*“Five thousand years ago, the people of China noticed that if they placed their homes to face the south, with hills behind them and gently flowing water in front, the people who lived in the home, would lead happy contented lives ... people noticed that the cold harsh winter winds came from the north. The hills behind their homes protected them from the worst of these. Flowing water allowed the crops to grow and created ch’i energy”.*

*Feng shui* is the result of the observation of the ancient Chinese that people are affected by their surroundings, which in a sense makes it the predecessor of Environmental Psychology. The observation of nature was of course not unique to the Chinese. From an **Environmental Social Science** perspective, early humans “examined weather patterns, interpreted animal behavior, and identified fertile soil ... (b)y doing so they conducted the first environmental studies” (Kopec, 2006, p. 3). They responded in appropriate ways such as stockpiling food and seeking shelter (Kopec, 2006).

Grant (2006a, p. 78) claims that *feng shui* is a form of survival and that humans do not do well unless things are in order around them. She continues (2006b, p. 64) that environmentally, things should make people feel good so that they are not burdened.

**Harmony** and **balance** are two very important principles in *feng shui*. According to Bohland (1999, p. 46) *feng shui*'s purpose is to “*help create an environment that enables ch'i, or energy, to circulate more freely*” and many of the underlying principles of *feng shui* are derived from fitting humans with the physical environment (Hobson, 1994).

**Harmony** with regards to the environment is of vital importance for health (Too, 1997 and Lupone, 1999). Part of achieving **balance**, is balancing the five elements (water, wood, fire, earth and metal - see paragraph 3.4.2.3) and locate it appropriately in a space (Wah, 1998). A sense of harmony and balance is created through the placement of objects and furnishings (Bohland, 1999, pp. 45-46).

The principles of harmony, balance and fitting humans to the environment are not unique to *feng shui* and are in line with universal design principles. Some examples of these universal design principles are:

- **Accessibility:** Our environment should be designed in such a way that as many as possible can use it without modification (Lidwell et al., 2003, p. 14).
- **Affordance:** An object or the environment's physical characteristics will influence its function. When the affordance corresponds with the intended function, the design will perform more efficiently and be easier to use (Lidwell et al., 2003, p. 18).
- **Consistency:** Ease of use improves when similar patterns are expressed in similar ways. Consistency is achieved by **aesthetic consistency** (style and appearance establish unique identities that can be easily recognized), **functional consistency** (consistency of meaning and action – to simplify usability and ease of learning), **internal consistency** (consistency with other elements in the system) and **external consistency** (consistency with other elements in the environment) (Lidwell et al., 2003, p. 46).

- **Iconic representation:** Pictorial images are used to represent signs and control to assist recognition and control across cultures. For optimal performance, it is important that there should be a shared understanding of what the icon represents (Lidwell et al., 2003, p. 110).
- **Mapping:** The relationship between controls and the associated outcome. Mapping is optimal when the outcome corresponds to the expectation (Lidwell et al., 2003, p. 128).
- **Similarity and uniform connectedness:** “(e)lements that are similar are perceived to be more related than elements that are dissimilar”. Lack of similarity results in the perception of differences. The fewest colours and simplest shapes will have the strongest grouping effects (Lidwell et al., 2003, p184). Elements close together are also perceived to be a group (proximity) (Lidwell et al., 2003, p. 160). Similarity is one of the Gestalt principles of perception.
- **Symmetry:** The most basic and enduring aspect of beauty. Symmetry in a design conveys balance, harmony and stability (Lidwell et al., 2003, p. 190).
- **Visibility:** Usability improves when it is clear how to use an object or area (Lidwell et al., 2003, p. 202).

According to Smith and Stewart (2006) *feng shui* is no longer considered the realm of New Agers. It is now recognized as a tool for improving people’s everyday lives, both in the short and the long term. The underlying principles of *feng shui* are valid for everyone in any time or place (Smith & Stewart, 2006). Other authors differ from this opinion. Bland (1999) for example lists *feng shui* as a new age method employed to counter workplace stress together with reflexology, yoga and meditation. Gillentine (2006, n.p.) is of the opinion that *feng shui* has become another New Age energy scam with arrays of products for sale to help improve health, maximize potential and guarantee fulfilment “*of some fortune cookie philosophy*”. Robert Todd Carroll ([www.skeptics.com](http://www.skeptics.com)) believes that *feng shui* is related to living with rather than against nature and that it is concerned with understanding the relationship between nature and ourselves in order to live in harmony within our environment. According to him it is often confused with interior decorating. As a sceptic he does

not believe that there is *ch'i* (energy) running through a space or people who are able to detect its flow.

According to Johanna Pochar (a *feng shui* practitioner quoted in Wah, 1998, p. 13): “90% of *Feng Shui* is ... common sense ... the use of water, mirrors and windchimes is more transcendental”. Along the same lines Cathleen McCandless (a *feng shui* consultant) in Grant (2006a, p. 78) is quoted as saying “When some of us think of *feng shui*, we think we need crystals, mirrors, flutes, incense, a little Buddha in the corner, or other types of New Age accessories. ... those types of superfluties are not necessary. *Feng Shui* can be made practical and make common sense to all of us”.

Hobson (1994) is of the opinion that, as Asian-based companies expand in other regions and as more Western based companies launch in Asia, it is likely that there will be need for a greater understanding of the concepts in other continents. From an Environmental Social Sciences perspective, Kopec (2006, p. xv) mentions that human beings are most satisfied in environments where they feel a connection between what they see and who they are.

*Feng shui* is a complex field as illustrated for example in *The Science of Feng Shui: a handbook for practitioners* by Vincent Koh, (2003) and more often foreign to the Western way of thinking. Even though the basic principles (beliefs) appear simple and straightforward, *feng shui* as a discipline is extremely complex (Hobson, 1994). A business or individual is subject to the influence of the Heavens (astrology) and the Earth (*feng shui*) and an auspicious time and place where the forces of both Earth and Heaven are most positive (Hobson, 1994). It is therefore not surprising that “Westernised” schools such as the Black Hat School and the Western School of *feng shui* developed. These schools use basic *feng shui* principles, but have made it more accessible and understandable to the Western way of thinking and living. According to Collins (2003), early *feng shui* practitioners located sites for homes and villages. An auspicious site would be where the vital energy (*ch'i* see paragraph 3.4.1.3) was harmonious and supportive of human life - strategically placing “habitats” above flood plains, below strong winds and where harmonious *ch'i* (energy) was flowing. They relied on intuition and highly tuned senses as well as the knowledge of their teachers.

Current *feng shui* practice in the Western world is presented with a different scenario, instead of locating land for structures, the Western *feng shui* practitioners are more often than not presented with a given structure (Collins, 2003; Brown, 2005). According to Wah (1998) an increasing number of US companies are adopting the design principles of *feng shui* for example: when Donald Trump builds a new building he ensures that the building faces the right direction (Grant, 2006a), Coca Cola Co adopted some of the principles of *feng shui* in their Atlanta complex (McKay, 2000). Where the principles are deeply ingrained in the psyche and culture of many Asians (Hobson, 1994), the author is of the opinion that it is doubtful that Western businessmen dabble in *feng shui* because of deep seated beliefs. This is supported by the report in the *New York Times* that Donald Trump said that “(it’s) just another element in which you can have the advantage over competitors. Asians are becoming a big part of our market and this is something we can’t ignore” (Lynn, 1997, p. 12).

It is incorrect to assume that all people from the Orient embrace *feng shui* principles and concepts (Hobson, 1994). As a result of the Chinese Cultural Revolution ancient Chinese customs such as *feng shui* were repressed and *feng shui* practitioners were secretly consulted (<http://www.theepochtimes.com/>).

Because of globalization, people take with them their ideas of beauty and design preferences to other areas and countries and therefore designs are becoming increasingly more cosmopolitan (Kopec, 2006, p. 125). Kopec (2006, p. 123) further states: “(n)otions of what constitutes the physical aspect of a home vary by culture, but the psychological components are fairly static: emotional attachment to place and perceived safety and security”.

According to Smith and Stewart (2006, p. 2) *feng shui* is frequently described as “the Chinese art of placement and design” - choosing an appropriate building site, locating the building on the property, arranging the rooms within the building and placing the furniture within the rooms. “Feng Shui enables us to position ourselves within our environment to our best advantage. The positioning of our houses and offices as well as their internal design affect us positively or negatively. Feng Shui helps us determine the most favourable positions for us and the layouts, colours and designs

which will support us” (Hale & Evans, 2007, p. 15). Angi Ma Wong (an intercultural and *feng shui* consultant quoted in Hendrickson, 2000) sums up *feng shui* as: Clean traffic flow, good air circulation and good architectural design.

According to Collins (2003) there are three basic principles that form the foundation of *feng shui*, namely:

- Everything is alive.
- Everything is connected.
- Everything is changing.

Grant (2006a, p. 78) says *feng shui* explains how place affects the human condition and how the five senses influence our own experiences when evaluating our environment. One should ask: What do we see, smell, hear, feel and taste (Grant, 2006b, p. 64)?

### **3.4. APPROACHES TO FENG SHUI**

Although there are numerous *feng shui* schools (according to Diamond, 2004 Master Joseph Yu is of the opinion more than 100). The two main approaches to *feng shui* are compass and non-compass approaches. The compass approach is based on compass readings whereas the non-compass *feng shui* approach uses surrounding landscapes to orientate the different *ch'i* energies (Brown, 2005). According to Brown (2005, p. 23) no approach is better than the other, it is more which one makes more sense to the individual. The non-compass schools in particular are criticized by the more traditional *feng shui* schools.

Diamond (2004) is particularly vocal in her criticism of specifically the Black Hat Sect School. She regards it as the best known *feng shui* school in the West, but the least authentic and “reliable” (although it does incorporate many universally understood Form School theories). “*It isn’t authentic feng shui, you could consider it on par with goal setting, coaching, or hypnosis*” (Diamond, 2004, p. 19). One of her main concerns is that through the development of the “New Age” (Diamond, 2004, p. 19) *Bagua* (see paragraph 3.4.2.2) it is a “one size fits all” solution, because certain

areas correlate to specific “*life stations*”. She also expresses her doubts that the creator (Prof. Thomas Lin Yun) is a *feng shui* master, but regards him as “*certainly a marketing genius*” (Diamond, 2004, p. 18). She also mentions that the school is sometimes called the McFeng Shui school by its critics: “... *this is not ancient feng shui, rather the board game version*” (Diamond, 2004, p. 19). It is, however, not surprising that non-compass schools are popular in the West.

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A “*one size fits all*” is directly in contrast with Environmental Social Sciences principles. According to Kopec (2006, p. xv) people respond to the world around them based on who they are. This will depend on inter alia their psychological and physical health, surroundings, personal control issues such as autonomy, safety, privacy, territory and crowding, culture and experiences.

Following the history of the *feng shui*, schools and movements within the broad approaches will be briefly discussed. The discussion is based on Brown (2005), Hale (2000), Hale and Evans (2007) and Smith and Stewart (2006), unless otherwise stated.

### **3.4.1. The environmental approach**

#### **3.4.1.1. Form or Landform School (Chinese)**

The Form school was the earliest approach and can be seen as the predecessor of *feng shui* (<http://www.fengshui.co.uk/FengShuiHistory.htm>). The basic needs were food and shelter. Observation helped to determine the wind directions, the location of water and the direction of the water flow, and the orientation of the banks determined the type of crops that could be grown. The contours and shapes of the landscape were studied to try and identify four mystical animals and these were then used to map out the natural flow of *ch'i* (energy) through the terrain in a way that helped to orientate and set up a dwelling. These were related to the four cardinal directions of the compass – the north, the black tortoise, east, the green dragon, south, the red phoenix, and west, the white tiger. The village or house that was surrounded by natural geographical shapes resembling these four animals was considered to be located in the most auspicious setting.

### **3.4.2. The Compass approach**

#### **3.4.2.1. Compass School (Chinese)**

The Compass School has the most widespread *feng shui* approach in China. This approach uses the *lo p'an* (a compass that has anywhere from 8 to 36 concentric circles, depending upon the sophistication of the *feng shui* practitioner, the *pa kua*, an octagon with a trigram from the *I Ching* on each of the eight sides, and the *lo shu* magic square). The auspicious direction is based on a person's birthday, and magnetic north is used to determine how to orient for example the individual's front door, bed, desk and chair based on that person's most favourable direction. The magnetic north shifts one degree every five years and this will result in shifting the front door and the placement of the bed, desk, and other key elements of the space every five years. If several people inhabit a space, a decision must be made as to whose "*most favorable direction*" will be used.

#### **3.4.2.2. Eight Mansions or East/West School (Chinese)**

The date of birth defines the energy (*ch'i*) a person is born with (kua number) and whether he/she is part of a west- or east-life group. There are four favourable and four unfavourable directions and locations which are applied to enhance specific things in a person's life. Half a person's home will be positive to him/her and the other half potentially harmful. The person's life group, the direction in which the building faces and the position of the main entrance all determine which half is which.

#### **3.4.2.3. Flying Star School (Chinese)**

The astrology chart of the building based on the period when it was constructed is merged with an astrology chart of the present year. The magic square (the *Bagua*) is then orientated according to the layout of the building and its surrounding. An update is needed each year as the new year's chart takes effect.



#### **3.4.2.4. Eight Directions School (Japanese)**

The eight directions are orientated over the building's floor plan by using a compass. Based on the magic square (the *Bagua or Pakua*), each direction carries a specific kind of energy into the building which can either be enhanced or calmed, according to the needs. Energies are not seen as positive or negative, but rather used to enhance your energy field in a way that makes a person feel happier.

#### **3.4.2.5. Life Aspiration School or *Bagua* 8 Aspirations School**

According to Webster (1998) the Life Aspiration School is a controversial branch of the Compass School. It is a very simple school of *feng shui* and very popular as a result of being easy to learn and apply (<http://www.my-zensation.com/life-aspiration-school.html>). It uses the Aspirations of the Pakua (*Bagua*) and is very popular in Hong Kong. The main advantage is the convenience because one does not need a compass or need to know any of the directions. The Aspirations of the Pakua is used by finding the compass direction that the main entrance of the building is facing (Webster, 1998). The Pakua is placed over the home or building based on the direction of the front door. Like the Eight Mansions School, each person has four "good" and four "bad" directions (<http://www.my-zensation.com/life-aspiration-school.html>).

### **3.4.3. The Non-compass approach**

#### **3.4.3.1. Three Gate School (Western)**

This school was developed in the 1970s in New York. The position of the entrance to a space, orientates the *Bagua*. Each sector of the *Bagua* represents an area in one's life, namely wealth, fame, relationships, children, helpful people, career, knowledge, family and oneself.

### **3.4.3.2. Black Hat School<sup>2</sup> (Black Hat Sect Tantric Buddhist *Feng Shui*) (Western)**

The Black Hat School is one of the more recent *feng shui* schools (Smith & Stewart, 2006). It was developed in the US about 15 years ago by Grand Master Thomas Lin Yun and is a combination of Tibetan Buddhism, Taoism and Classical *feng shui* (<http://fengshui.about.com/qt/fengshuischools.htm>). It does not use the compass (*lo p'an*), focuses less on the magnetic compass points and the importance of the best directions for an individual. The emphasis is on the natural flow of energy, the balancing of energies and the use of both tangible and intangible solutions to correct the problems in our environments. It uses the *Bagua*, but always applies it by placing the *Kan*, or Path in Life, section of the *Bagua* on the same line as the entrance to the space rather than orientating it to magnetic north, as does the compass school. Modern Western knowledge, sciences and disciplines were incorporated into the traditions of *feng shui*.

### **3.4.3.3. Intuitive/Modern *Feng Shui***

Intuitive or modern *feng shui* is a Western adaptation of traditional *feng shui*. Instead of Chinese culturally-specific symbols, it has been adapted to Western lifestyle and taste. According to Smith and Stewart (2006) all beings, including humans, have an intuitive instinct for the universal *feng shui* principles, but as society has evolved there was movement away from these principles and created environments for other reasons, to our detriment. This category includes schools such as the Western School of *feng shui* and the Pyramid School (Hale, 2000; Hale & Evans, 2007).

### **3.4.4. Implication of the various schools**

Distinguishing between the various schools is important as books and guides written about *feng shui* are based on the authors' school of practice (preference) and therefore sources seemingly contradict each other. The contradiction can go so far that different schools can lead to different analyses and outcomes, for example the

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<sup>2</sup> Also sometimes abbreviated as Black Sect School.

Aspirations of the Pakua can differ from the *Bagua* used in the Black Hat Sect School and can result in different analyses and outcomes (Webster, 1998).

Diamond (2004) is of the opinion that a tremendous amount of misinformation about *feng shui* has been published, exaggerating the confusion. She lists the following aspects that could further lead to confusion (Diamond, 2004, p. 7 and p. 9):

- Historically false schools and books were intentionally created to confuse people and prevent the real knowledge to become known.
- The many different *feng shui* schools each have their own priorities and when only one branch (school) is explored, it limits holistic and comprehensive understanding (Diamond, 2004, p. 7). It is interesting to note that Diamond wrote her book from one perspective, namely the Flying Star School.
- *Feng shui* emanates from a superstitious culture and folk remedies, rituals, spiritual beliefs mixed with “*authentic, timeless and universal*” (Diamond, 2004, p. 7) *feng shui* principles.
- “*New Age practitioners have tried to reinvent the wheel and the unsuspecting public assumes these New Age interpretations are ancient, when actually they are not*” (Diamond, 2004, p. 7). New Age spin-offs are for example the Black Hat School and the Pyramid School, according to Diamond.

### **3.5. FENG SHUI DESIGN FOR THE OFFICE**

To get a better understanding of *feng shui*, it is important to understand the underlying philosophical principles of *feng shui* design and the accompanying basic design tools, which will be discussed in this section.

*Feng shui* is based on three philosophical principles, namely the concept of Dao, *yin-yang* and the flow of energy (*ch'i*) (<http://pro-remont.com/an/design/fenshuy.html>). The basic *feng shui* design tools are the Commanding Position, the *Bagua* and the Five Elements. The *feng shui* analysis is done in relation to the *Primary Purpose* of the space.

### 3.5.1. Philosophical principles

#### 3.5.1.1. Dao (Tao)

*Dao* literally means “*the way*” (Hobson, 1994). It produces oneness (Hobson, 1994) and is the path to unification (<http://pro-remont.com/an/design/fenshuy.html>). The latter source continues: “*We are closely linked with the outside world, and our lives cannot be separated from the life forces around us. Every part is dependent on other parts, creating a whole, even if we are not aware of it*”.

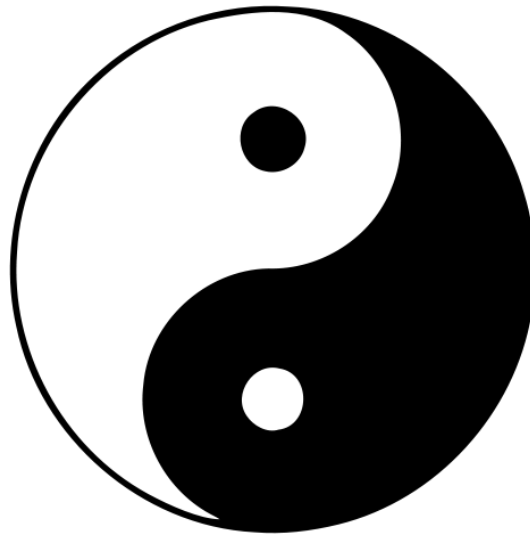
According to Hobson (1994) the *Dao* in return produces duality, *yin* (dark, feminine and absorbent) and *yang* (bright, masculine and powerful).

#### 3.5.1.2. Yin and yang

While recognizing the pattern of opposites in nature, traditions like *feng shui* embrace the whole as an organic unit (like the *yin* and the *yang*) (O’Connell & Airey, 2007, p. 82). *Yin* and *yang* are seemingly opposing forces ([http://en.wikipedia.org/wiki/Yin\\_yang](http://en.wikipedia.org/wiki/Yin_yang)) which are complementary opposites (unlike Western opposites struggling with each other) (Frolov, n.d.). *Yin* complements or completes *yang*, and *yang* complements or completes *yin* - they are always together (Smith & Stewart, 2006). The *yin/yang* symbol is indicative of the balancing natural law or cycle of change. “*The symbol shows that life must be viewed as a whole and cannot truly exist in isolated parts. ... Together the two shapes form a perfect circle, symbolizing the wholeness of nature*” (O’Connell & Airey, 2007, p. 38). One should strive to have one’s environment neither too *yin* or too *yang* (Hendrickson, 2000). *Yin* and *yang* are relative: Yellow is *yin* when compared to the more *yang* energy of red, but is *yang* when compared to the more *yin* energy of purple (Smith & Stewart, 2006).

Hobson (1994) gives the following example of the *yin-yang* balance: mountains and water are interdependent; mountain (*yin* or passive) is balanced by water (*yang* or active).

#### Figure 3.2 Yin and yang symbol



Hale and Evans (2007, p. 221) give the following summary of *yin* and *yang* aspects in an office:

**Table 3.3 *Yin* and *yang* aspects in an office**

<b><i>Yin</i> offices contain:</b>	<b><i>Yang</i> offices contain:</b>
Paper	Machines
Carpets	Telephones and faxes
Curtains	Rectangular desks
Art works	Blinds
Dark furniture	Metal cabinets
One person	People traffic
Wooden cabinets	Conversation
Wallpaper	Light décor
Textured surfaces	Reflective surfaces
<b><i>Yin</i> people are:</b>	<b><i>Yang</i> people are:</b>
Receptive	Enthusiastic
Creative	Energetic
Imaginative	Quick-thinking
Methodical	Precise

**Table 3.3 *Yin* and *yang* aspects in an office (Continued)**

<i>Yin</i> activities include:	<i>Yang</i> activities include:
Administration	Brainstorming
Creating	Deadlines
Producing	Marketing
Packaging	Selling
Reviewing	Promoting

**Table 3.4 *Yin* and *yang* aspects (Smith & Stewart, 2006, p. 33)**

<i>Yin</i>	<i>Yang</i>
Energy that is receptive, yielding and passive	Energy that is assertive, creative and initiating
Feminine	Masculine
Unconscious	Conscious
Right brain	Left brain
Intuition	Logic
Night	Day
Dark	Light
Earth	Sky
Cold	Hot
Stillness	Motion
Inward	Outward
Contracting	Expanding
Smaller	Larger
Denser	Thinner
Houses	People
Interior	Exterior
Open areas	Built-up areas
Cool colours	Warm colours
Intrusions	Protrusions
Round	Sharp
Curved	Straight
Liquids	Solids
Empty	Full
Soft	Hard
Areas of inactivity: garages, empty dwellings, residences left vacant for long periods of time, schools, offices, toilets and closets	Areas of activity: dwellings with frequent activity

### 3.5.1.3. The flow of energy: *Ch'i*

*Ch'i* (energy) is a concept that is not known in Western philosophical discourse and is defined as the life force of all animate things (Hale, 2000; Hale & Evans, 2007). According to O'Connell and Airey (2007, p. 82), in many cultures, the earth and human bodies are thought to channel energy or "life force": in India it is called *prana*, in China and Japan *ch'i*, in Polynesia *mana* and in the Western tradition it is esoteric. The natural world is made up of energy, with atoms, protons, neutrons, electrons and particles vibrating together at different frequencies. *'The universe can be conceived as being held together by invisible energetic "glue"'* (O'Connell & Airey, 2007, p. 82). According to the same authors, Jung saw this force in the "collective consciousness" – "a giant reservoir of archetypal energy pattern that we tap into and express symbolically" (O'Connell & Airey, 2007, p. 82).

The purpose of *feng shui* is to create environments in which *ch'i*<sup>3</sup> flows smoothly to achieve mental and physical health (Hale, 2000; Hale & Evans, 2007). According to Smith and Stewart (2006) the way *ch'i* or energy, flows through a space impacts on people's experience of stress and their behaviour. *"All of the energies that surround us, especially those in our physical spaces, reflect how we feel about ourselves and, at the same time, affect our behaviour, often on a subconscious level"* (Smith & Stewart, 2006, pxvi). The impact is related to proximity and time spent in a space (Smith & Stewart, 2006, p. 10).

According to Smith and Stewart (2006) every problem that arises in a space will relate to the flow of energy and the balance of energies and is therefore important in the design of any space. When energy is blocked, pinched or prevented from flowing smoothly and freely, the experience of stress increases (Smith & Stewart, 2006). By opening up the flow of energy, the opportunity for people in the space to live up to their potential is increased (Smith & Stewart, 2006).

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<sup>3</sup> The essence of life and without it nothing can live (Hobson, 1994).

*Ch'i* (energy) can take on three forms (Diamond, 2004 and, <http://www.fengshuiprophet.co>) namely:

- **Shen(g) *ch'i*** – good *ch'i*. Benign, health inducing energies supporting harmony and balance. It is represented by an environment which is good, clean, tidy, has good ventilation, lighting, pleasant views and no awkwardly shaped rooms.
- **Si *ch'i*** – unhealthy *ch'i*. It is harmful energy for example it is the *ch'i* of people who are angry or a place that has an uncomfortable feel to it.
- **Sha *ch'i*** – killing *ch'i*. Harmful, unhealthy environment. It is smelly, bad, dirty, oppressive, threatening and depressing.

Certain elements in the environment have an influence on the flow and balance of energy. Some internal features in the space and some external features surrounding a property might be relevant in analysing the energies that are affecting people as they approach and function in the space (Smith & Stewart, 2006).

According to Smith and Stewart (2006, p. 11) the following external and internal features may affect the energy flow and balance:

**Table 3.5 Internal and external features affecting people and their spaces**

Internal features	External features
Entrance area	Bodies of water
Shapes of rooms	Nature e.g. vegetation, trees
Pattern of flow	Roads
Hallways and stairs	Bridges
Position of furniture (e.g. beds, desks, stove)	Build structures in environment (e.g. churches)
Placement of doors	Buildings
Placement of windows	Structures
Placement of fireplace	Neighbours
Electrical appliances	Transformers
Lighting	Telephone poles
Ceiling lines, beams and columns	Entrances
Position of bathroom	Lighting
Fixtures	Sounds
Colours	Odours
Clutter	Colours



The placement of features should allow the unobstructed movement of *ch'i* (energy) throughout an area (Lagatree, 1997). Some specific factors that may have an influence on energy flow are for example (Bohland, 1999; Hale, 2000; Hale & Evans, 2007; Lynn, 1997; Smith & Stewart, 2006):

- Blocking walls – being faced by a wall when entering a space.
- Doors – size, door swing (inside or outside), door handing (opening to the left or the right), door placing (e.g. doors hitting/touching each other when opening).
- Windows e.g. when a window is placed opposite the entrance door energy is pulled through the space out of the window.
- Placement of furniture too close to each other and sharp corners of furniture.
- Beams which are forcing down energy.
- Columns which block energy.
- Slanted ceilings which force energy down the slope of the ceiling.
- Slanted or angled walls give a sense of things being off balance. From an **Environmental Social Science** perspective, research conducted by Baird, Cassidy and Kurr (1978) indicated that most individuals prefer ceilings higher than 2.44 meters (either flat or sloping) in combination with 90 degree or greater corner angles. This creates the greatest perception of space.
- Clutter - represents the past and blocks a person and prevents him/her from moving on.
- Materials used - hard and shiny materials e.g. metal and glass move energy quickly compared to denser materials such as non-shiny materials, dark wood and upholstered chairs which contain energy and energy associated with them is slower.

Certain aspects may change the energy in a space by stabilizing or stimulating it. A summary of these aspects are presented in the table below (Smith & Stewart, 2006, p. 12).

**Table 3.6 Items that may change energies in a space**

Stimulating		↔	Stabilising	
Mirrors	Lights	Crystal	Polished metal	
Bells	Wind chimes	Waterfalls	Radio/TV	
Trees	Flowers	Plants	Fish	Pets
Waterfalls	Fountains	Wind chimes	Flags	Uplighting
Statues	Heavy rocks	Fences	Large planters	
Flowers	Incense	Essence of oils	Cooking aromas	
Fabrics	Surfaces	Rugs	Textured materials	
Hue	Intensity	Value	Shade	Tint

As discussed in the previous section, there are various schools of *feng shui* and although some principles and points of departure are the same, the approach differs. The *feng shui* principles discussed in the next section will be based on the two westernised schools of *feng shui*, namely the Western School of *Feng Shui* and the Black Hat School (Black Hat Sect Tantric Buddhist *Feng Shui*). These two schools were selected as a basis for discussion, because it relates to the Western way of thinking.

### 3.5.2. Basic design tools

Certain *feng shui* tools are used to enhance the potential of a space and its occupants (Smith & Stewart, 2006), namely:

- The **Commanding Position**
- The *Bagua*
- The **Five Elements**

The above is analysed in relation to the *Primary Purpose* of a space. The *Primary Purpose* is the starting point of every decision (Smith & Stewart, 2006).

#### 3.5.2.1. Primary purpose of the space

According to Smith and Stewart (2006) every analysis and design is based on the *Primary Purpose* of a space and the goal is to make first impressions consistent with

the purpose of the space. If this does not happen, the environment becomes unfocused. The *Primary Purpose* is applicable on two levels, namely the building itself and each individual room or area, and is always related to the required or desired energy in a space. When designing a space based upon its *primary purpose*, energy and function are equally important (Smith & Stewart, 2006). From an **Environmental Social Science** perspective the primary purpose of a space is also an important concept in Environmental Psychology, although it is used in a broader sense (e.g. a home vs. an office) (Kopec, 2006) compared to *feng shui* where the primary purpose of each space is considered separately (e.g. bedroom vs. boardroom).

### **3.5.2.2. The commanding position**

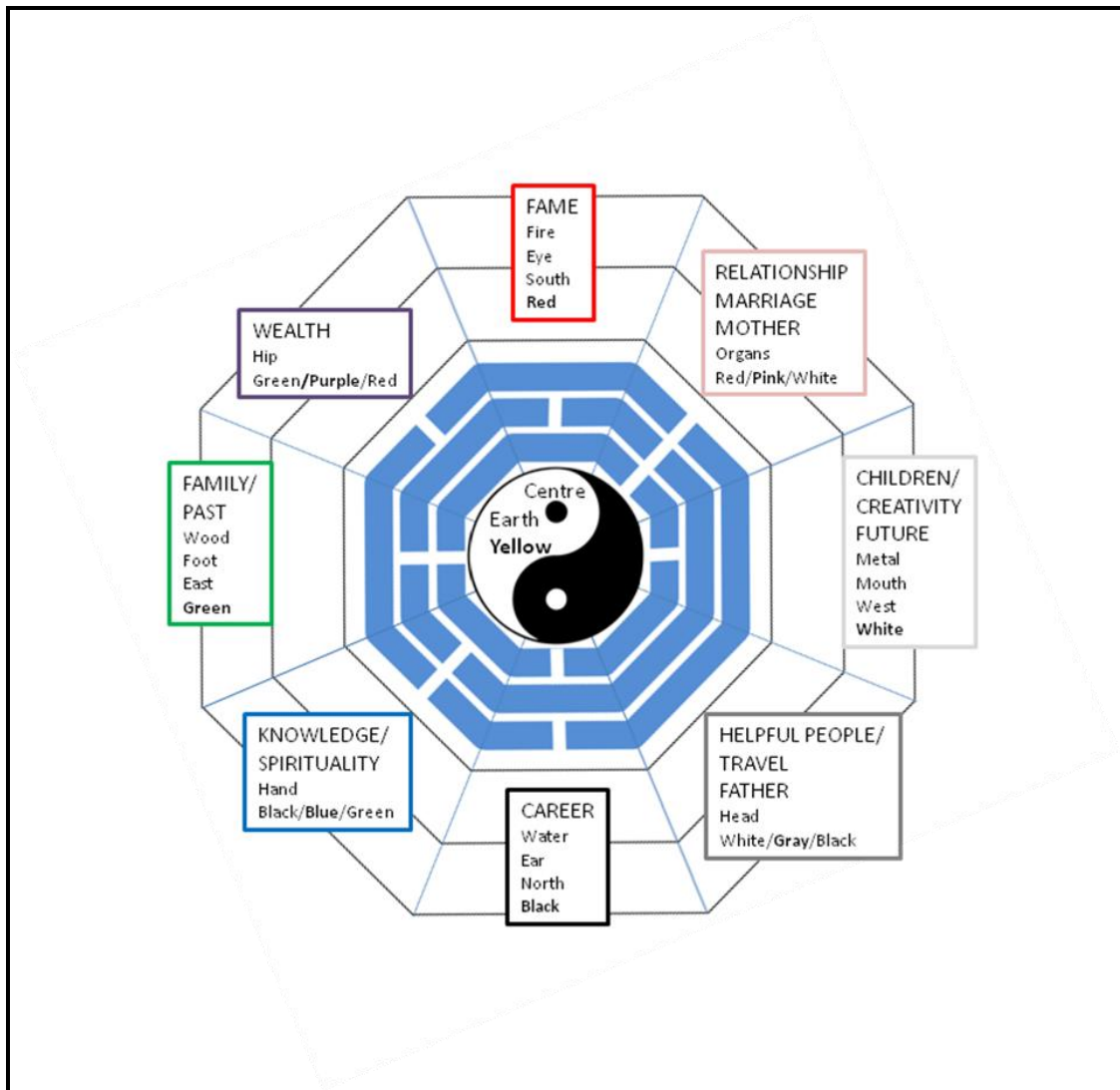
The commanding position is the place in a room with the greatest control over the space. The commanding position in any space is the position the furthest away from the main entrance with a view of the entrance (Smith & Stewart, 2006). The commanding position principles are:

- Out of the direct line of the door where people can see the occupant.
- Full view of the room and door.
- Further from the door.
- Back positioned towards the wall i.e. a strong support behind the occupant.

### **3.5.2.3. The *Bagua* (or *Pakua*)**

The *Bagua* is an octagon with each of the eight sections and centre representing a particular aspect of life and of the flow of events (Smith & Stewart, 2006). The *Bagua* literally means “*eight areas*” (“*ba*” = eight, “*gua*” = area) and is presented in the following diagramme.

**Figure 3.3 The eight sided *Bagua* <sup>4</sup>**



The *Bagua* used in the Black Hat School is a simplified version of the ancient *Baguas*. The *Bagua* map is used to map a room or location and to determine how the different sections correspond to different aspects in one's life (<http://en.wikipedia.org/wiki/Trigrams>).

The map can be used over the land, one's home, office or desk to find areas lacking good *ch'i* (energy), and to show where there are negative or missing spaces and what may need rectifying or enhancing in life or the environment (<http://en.wikipedia.org/wiki/Trigrams>). It is also a tool for selecting and locating

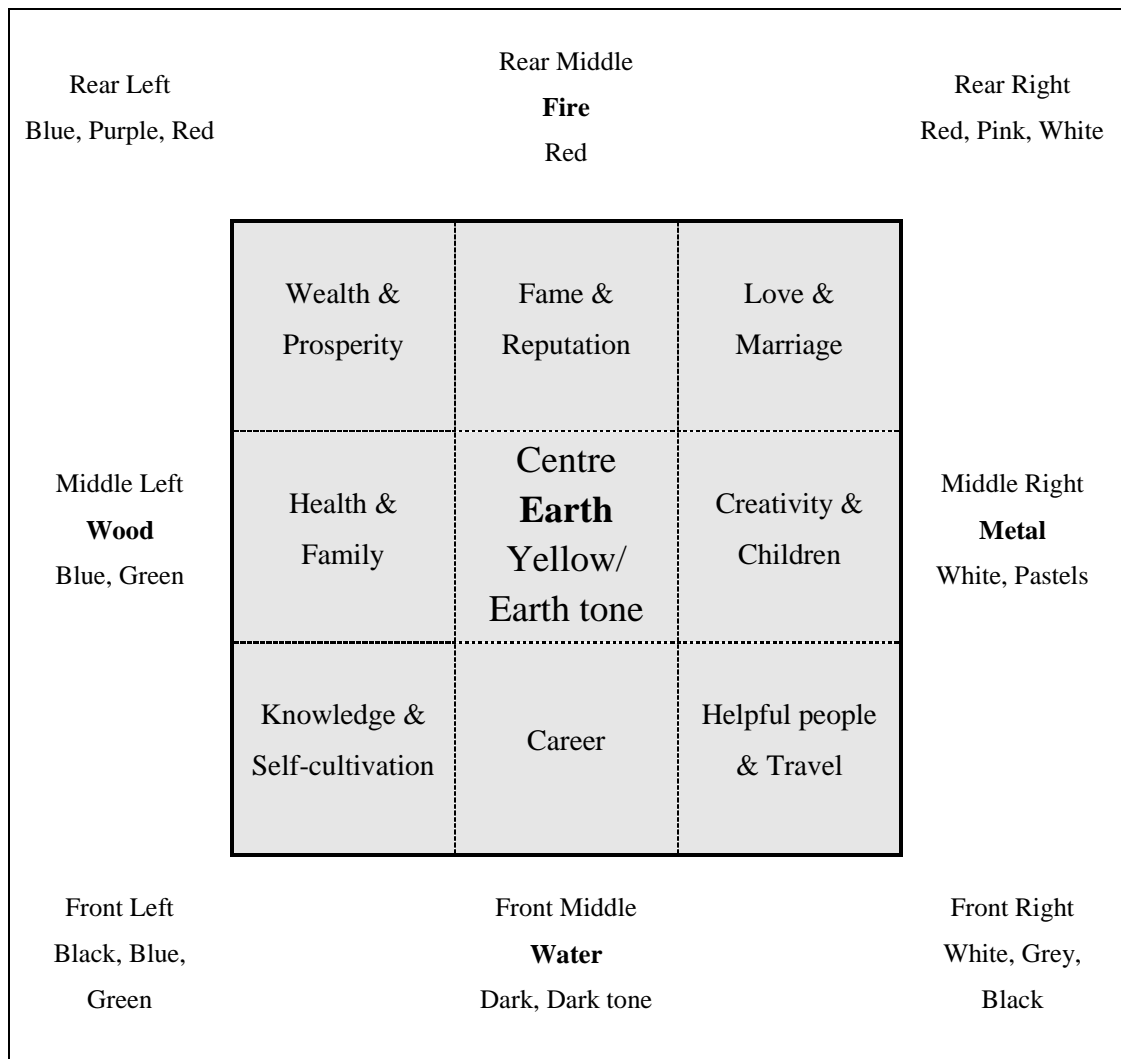
<sup>4</sup> <http://www.thespiritualfengshui.com/feng-shui-bagua.php>

interior design elements. The functionality of an environment may be effectively enhanced by selecting objects, materials, and colours, and placing them on their corresponding *Bagua* area (Smith & Stewart, 2006).

The *Bagua* is applied in the Black Hat School by placing the Path of Life position of the *Bagua* on the same line as the main entrance to the space (Smith & Stewart, 2006) compared to the traditional *feng shui* schools using the compass and cardinal directions (<http://en.wikipedia.org/wiki/Trigrams>).

The Black Hat *Bagua* map is presented below (Collins, 2003, p. 62).

**Figure 3.4 The *Bagua* map**



A practical example of the use of the *Bagua* in design is illustrated by Stewart and Smith (2006, p. 187). The ideal position of certain divisions and positions in the organisation are presented in Figure 3.5.

**Figure 3.5 Ideal positioning of divisions and positions**

POSITION	LOCATION	BAGUA AREA
Chief Executive Officer	Far Right	Relationship corner
Chief Financial Offices	Far Left	Prosperity corner
Marketing Director	Centre	Reputation area
Library or Research Department	Near left	Knowledge area
Public Relations	Near right	Helpful people area

**Art of placement: Perspectives and findings in the Environmental Social Sciences (also see paragraph 4.1.7, Placement of furniture):**

From an Environmental Social Sciences perspective, the art of placement is also an important concept. Kopec (2006, p. 15) gives the example that the worst possible position for a kitchen will be north-west (*author's note: adapted for the Southern Hemisphere*) if the occupants work full day. While already stressed out from the day's activities, the evening sun will add glare and heat when preparing dinner, which can create agitation and even hostility. Where this differs from Black Hat *Feng Shui*, is that in Environmental Social Sciences it is customised and in Black Hat *Feng Shui* it is fixed according to the *Bagua*.

Built spaces are labelled (e.g. the conference room, a private office) and the label encodes information on how we understand how spaces are inhabited. The label does not describe the configuration of the space (Peponis & Wineman, 2002).

### The *Bagua* colour theory

The *Bagua* areas are also associated with specific colours as presented below.

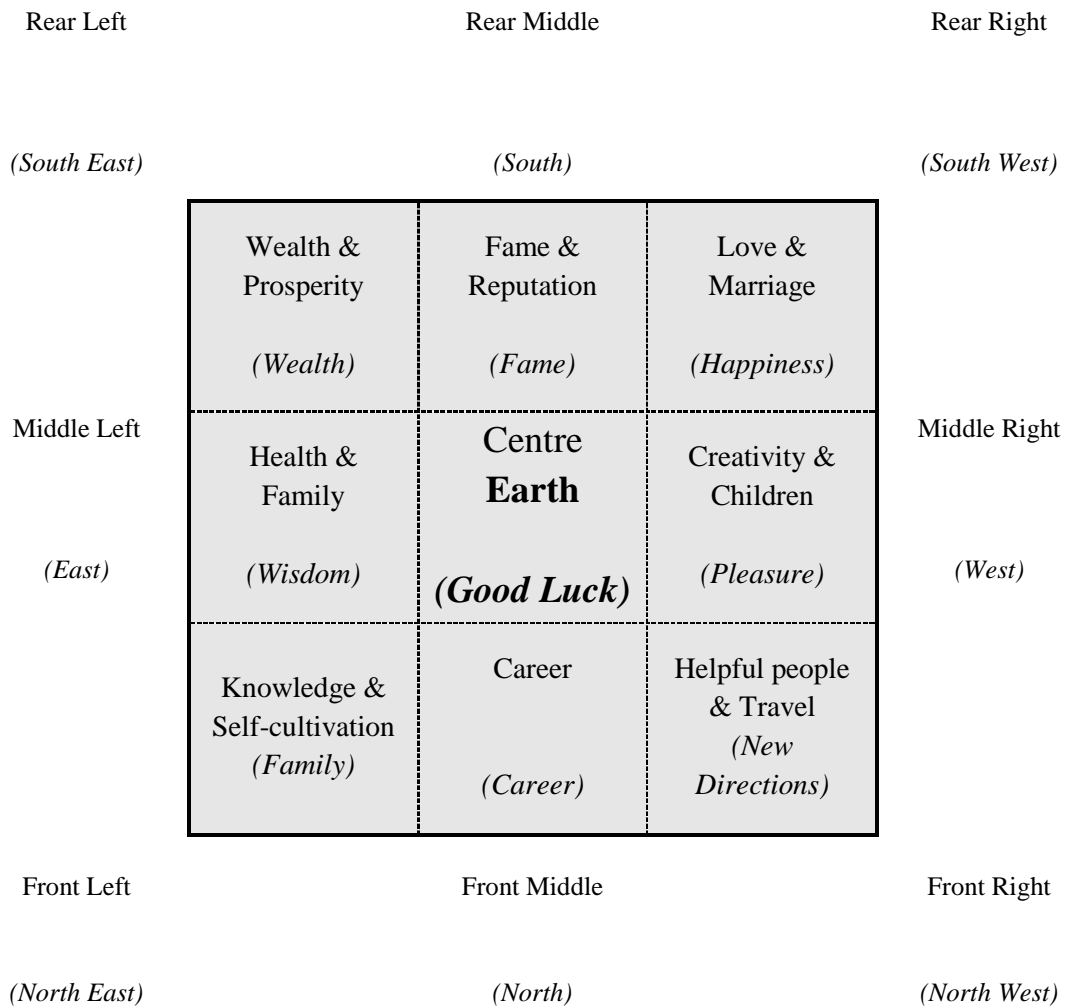
**Figure 3.6 *Bagua* colours** (Smith & Stewart, 2006, p. 63)

<b>Prosperity</b> Purple	<b>Reputation</b> Red	<b>Primary Relationship</b> Rose
<b>Beginnings / Family</b> Green	<b>Health</b> Yellow	<b>Completion / Children</b> White
<b>Self-Knowledge</b> Blue	<b>Path in life</b> Black	<b>Helpful People</b> Gray

Smith and Stewart (2006) give an example of trying to enhance the reputation or image of a business. A pure red might convey the wrong image, whereas a red mixed with a little blue, resulting in a burgundy, could communicate a reputation (red) that is filled with self-knowledge (blue).

As mentioned earlier in paragraph 3.3.1, the *Bagua* of the Life Aspiration School and the Black Hat School's *Bagua* and as Webster (1994) illustrated in his book, will result in different analyses. Below is a comparison between the two with the Aspiration of the *Bagua* in brackets.

**Figure 3.7 The *Bagua* map and Aspirations of the *Bagua*: Comparison<sup>5</sup>**



<sup>5</sup> Smith & Stewart, 2006, p. 45 and Webster, 1994, p. 16, p. 20



#### 3.5.2.4. The five elements

The five elements referred to in *feng shui* are: *Water, Wood, Fire, Earth and Metal*.

According to Smith and Stewart (2006, p. 50), the five elements are primarily used to:

- Create a very specific energy in an environment.
- Balance the energy of the people in a space.
- Enhance a particular aspect of a person's life or a company's business.

An element can be represented by (Smith & Stewart, 2006, p. 50):

- An object or finish that is made of, or represents, the element.
- The colour of the element.
- The shape of the element.
- A picture of something that connotes that element.

Each of these elements has a symbolic meaning:

**Water:** Water is a symbol of life (O'Connell & Airey, 2007) and as a water fountain it represents the feminine (O'Connell & Airey, 2007; Wilkinson [Ed.], 2008). Water is dynamic and chaotic – never moving in a straight path (O'Connell & Airey, 2007).





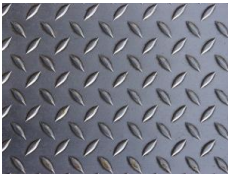
**Wood:** Trees symbolise the cycle of life, health and potency with additional themes of shelter, permanence and immortality (O'Connell & Airey, 2007; Wilkinson [Ed.], 2008).

**Fire:** Fire is active and masculine and has dual symbolism – on the one side it is associated with war and chaos, but on the other side it symbolises purification, regeneration, the home hearth and divine love (Wilkinson [Ed.], 2008).

**Earth:** As mother earth, it symbolises sustenance, nurturing, the source of all life. It is feminine and passive (Wilkinson [Ed.], 2008).

**Metal:** Various metals have various symbols attached to them: gold is perfection, iron is strength and durability, silver is chastity, purity and wisdom, copper is female and healing (Wilkinson [Ed.], 2008).

**Table 3.7 Associations with the five elements\***

	<b>Object</b>	<b>Colour</b>	<b>Shape</b>	<b>Qualities</b>	<b>Direction</b>
<b>Water</b> 	Fountain Stream Pond Glass Crystal Mirror	<b>All shades of blue or black</b>	Wavy Reflective Meandering patterns	Black: Research Compassion Intellect Creativity	North
<b>Wood</b> 	Wood Wicker Cane Paper Tree Plant	<b>All shades of green</b>	Tall vertical columns	Green: New business, growth and development. Warm, generous disposition.	East
<b>Fire</b> 	Candle Fireplace Light Lamp Stove Incense	<b>Red, maroon, burgundy, hot pink, etc.</b>	Pointed Triangular Triangles	Red: Dynamic, outgoing, forward-looking. Competitive and energetic.	South
<b>Earth</b> 	Plaster Pottery Ceramics Brick Statuary Rocks	<b>Orange, yellow, brown</b>	Low horizontal squares	Yellow: Intellectual, rational Brown: Stability	Centre
<b>Metal</b> 	Steel Brass Silver Bronze Copper Gold	<b>White, silver, grey, gold</b>	Spherical hard round shapes	White: Fresh start. Self-reliant and determined.	West

\* Compiled from the following sources: <http://www.onlinechineseastrology.com/content-detail.aspx?ID=149>, Hale, 2000; Hale & Evans, 2006; Smith & Stewart, 2006; Wilkinson [Ed.], 2008

To create a sense of completeness and balance, the five elements should be present in any space which does not imply that each element needs to be represented in exactly

20 percent of the design, but the absence of an element will make the space feel incomplete (Smith & Stewart, 2006).

### **3.6. SUMMARY**

In Table 3.8 the literature review of both *feng shui* and Environmental Social Science are summarized. Included is also any applicable symbolism associated with the specific design principle. This table will be expanded to include results from this study as well.

**Table 3.8 Summative comparison of design elements**

Design principle	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comments
<b>Soundness of <i>feng shui</i></b>	<p><i>Feng shui</i> is no longer considered the realm of New Agers but is now recognized as a tool for improving people’s everyday lives, both in the short and the long term. The underlying principles of <i>feng shui</i> are valid for everyone in any time or place.</p> <p>Robert Todd Carroll in <i>www.skeptics.com</i> believes that <i>feng shui</i> is related to living with rather than against nature and that it is concerned with understanding the relationship between nature and ourselves in order to live in harmony within our environment. According to him it is often confused with interior decorating.</p>		<p>Bland (1999): <i>Feng shui</i> is a new age method employed to counter workplace stress together with reflexology, yoga and meditation.</p> <p><i>Feng shui</i> has become another New Age energy scam with arrays of products for sale to help improve health, maximize potential and guarantee fulfilment “<i>of some fortune cookie philosophy</i>”.</p> <p>Observation of and being in harmony with nature and the physical environment is at the heart of Environmental Psychology.</p>	<p>An increasing number of US companies are adopting the design principles of <i>feng shui</i> for example: when Donald Trump builds a new building he ensures that the building faces the right direction, Coca Cola Co adopted some of the principles of <i>feng shui</i> in their Atlanta complex.</p> <p>Being aware of the environment is equally important for both <i>feng shui</i> and <b>Environmental Social Science</b>.</p>
<b>Approaches to <i>feng shui</i></b>	<p>The “New Age” Bagua is a “one size fits all” solution because certain areas correlate to specific “life stations”. The westernised Feng Shui schools are sometimes called the McFeng Shui schools: “...<i>this is not ancient feng shui, rather the board game version</i>’ (Diamond, 2004, p. 19).</p> <p>Compass schools are not regarded as a “one size fits all”, although the basis is not on people preferences, but rather esoteric principles</p>		<p>A “<i>one size fits all</i>” is directly in contrast with Environmental Social Science principles. People respond to the world around them based on who they are. This will depend on inter alia their psychological and physical health, surroundings, personal control issues such as autonomy, safety, privacy, territory and crowding, culture and experiences.</p>	

Design principle	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comments
<b>Art vs. performance people vs building</b>	<p>The people are much more important than the building. <i>Feng shui</i> is all about making people comfortable whatever the design style. By applying <i>feng shui</i> principles the number of stressful details should be reduced which will make us calmer and happier.</p> <p><i>“It teaches that we need to surround ourselves with the energy, balance, and harmony found in nature to lead healthy and productive lives. Its basic premise is that we encounter daily (consciously and subconsciously) hundreds of details that can make us tense and uncomfortable”</i> (Smith &amp; Stewart, 2006, pix).</p>		<p>The average person is motivated by convenience and functionality and the designer is motivated by an artistic nature. Human beings are most satisfied in environments where they feel a connection between what they see and who they are. Furniture can contribute to the overall décor and at the same time create the illusion of space. But, <i>“if the furnishings are not suitable for the intended users then the environment has failed its primary purpose of supporting human habitation”</i> (Kopec, 2006, p. 59). Environments should be both pleasurable and functional.</p>	<p>Both <i>feng shui</i> and <b>Environmental Social Science</b> put the inhabitants of the building first.</p>
<b>Dao</b>	<p>“The way” – humans are closely linked to the outside world. Every part is dependent on another. The different parts create a whole. It leads to the concept of <i>yin</i> and <i>yang</i>.</p>		<p>Systems theory - a framework by which any group of objects that work together to produce some result can be investigated and/or described</p>	<p>The principle of wholeness (as in the Dao) and interlinking, interdependent parts is underlying to systems theory.</p>
<b><i>Yin and yang</i></b>	<p>Opposing forces that are intertwined, interdependent and complementing each other.</p>	<p>The wholeness of nature</p>	<p>Opposing forces as part of a whole as for example in the Anima and Animus is also part of <b>Environmental Social Sciences</b>.</p>	

Design principle	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comments
<b>Five elements of water, wood, metal, fire, earth</b>	<p>To create a sense of completeness and balance, the five elements should be present in any space the absence of an element will make the space feel incomplete.</p> <p>The five elements are primarily used to:</p> <ul style="list-style-type: none"> <li>-Create a very specific energy (<i>ch'i</i>);</li> <li>-Balance the energy of the people; and</li> <li>-Enhance a particular aspect of a person's life or a company's business.</li> </ul> <p>The five elements theory is a natural systems concept - different elements, energies, archetypes, or life-cycle phases working together and influencing one another in a larger system or context.</p>	<p><b>Water:</b> A symbol of life. It is dynamic, chaotic – never moving in a straight path.</p> <p><b>Wood:</b> The cycle of life, health and potency with additional themes of shelter, permanence and immortality.</p> <p><b>Fire:</b> Active, masculine and has dual symbolism – associated with war and chaos, but also with purification, regeneration, the home hearth and divine love.</p> <p><b>Earth:</b> Sustenance, nurturing, the source of all life. Feminine and passive.</p> <p><b>Metal:</b> Gold - perfection, iron - strength and durability, silver - chastity, purity and wisdom, copper - female and healing.</p>	<p>According to the prospect-refuge theory people feel most comfortable on the edge of the wood near water. Natural elements have a positive effect on users of buildings.</p>	<p>In feng shui the five elements is a core concept in any design. In <b>Environmental Social Sciences</b> the elements as representation of nature is not a strange concept, but does not play such a prominent and pivotal role in design.</p>
<b>Balance and harmony</b>	<p><b>Harmony and balance</b> are two very important principles in <i>feng shui</i>. According to Bohland (1999, p 46) <i>feng shui</i>'s purpose is to “<i>help create an environment that enables ch'i, or energy, to circulate more freely</i>” and many of the underlying principles of <i>feng shui</i> are derived from fitting humans with the physical environment. <b>Harmony</b> with regards to the environment is of vital importance for health. Part of achieving <b>balance</b>, is balancing the five elements and locate it appropriately in a space. A sense of harmony and balance is created through the placement of objects and furnishings.</p>		<p>Main aim is to create environments which are balanced and reflect harmony, in other words to create environments where people feel a sense of place.</p>	<p>In both traditions harmony and balance is at the core of creating environments where the user will feel a sense of place.</p>

Design principle	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comments
<b>Flow of <i>ch'i</i> (energy)</b>	<i>Ch'i</i> is the life force of all animate things. Every problem that arises in a space will relate to the flow of energy ( <i>ch'i</i> ) and the balance of energies and is therefore important in the design of any space.	In many cultures, the earth and human's bodies are thought to channel subtle energy or "life force": "In India this is called <i>prana</i> , in China and Japan it is called <i>chi</i> or <i>ki</i> , in Polynesia it is called <i>mana</i> , in the Western tradition it is "etheric". The natural world is made up of energy, with atoms, protons, neutrons, electrons and particles vibrating together at different frequencies. The universe can be conceived as being held together by invisible energetic "glue" (O'Connell & Airey, 2007, p. 82).	According to O'Connell and Airey (2007) Jung saw the energy force in the collective unconscious.	The flow of <i>ch'i</i> (energy) is a core concept in <i>feng shui</i> , but is a foreign concept in <b>Environmental Social Science</b> .
<b>Primary purpose</b>	The <i>primary purpose</i> is applicable on two levels, namely the building itself and each individual room or area, and is always related to the required or desired energy ( <i>ch'i</i> ) in a space. When designing a space based upon its <i>primary purpose</i> , energy and function are equally important. Every analysis and design is based on the <i>primary purpose</i> of the space and the goal is to make first impressions consistent with the purpose of the space. If this does not happen, the environment becomes unfocused.		The primary purpose of a space is also an important concept in <b>Environmental Social Science</b> .	The primary purpose of a space is equally important in both <i>feng shui</i> and <b>Environmental Social Science</b> . The difference is that in <i>feng shui</i> the principle primary purpose is applied in each space.
<b>Environment</b>	The way the total environment interacts with people, the interior, the exterior – natural and man-made.		Typical aspects inter alia addressed in ergonomics are furniture, interior air quality, lighting, sound, design of workstations, monitors, computers, keyboards, peripherals, office ambiance and all relievable stress factors (both mental and physical) associated with work	The components in a system are interrelated. One change in a system will have an effect on the other variables in the system as well as other systems.

Design principle	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comments
<b>Commanding position</b>	The commanding position in any space is the position the furthest away from the main entrance with the greatest control over the space.		People locate themselves in a space according to clear patterns – people in restaurants tend to sit around the periphery rather than in the middle. People tend to wait out of traffic flow near pillars. It is an indication that there is a human preference to be positioned near a solid structure that can afford protection.	Another core concept in <i>feng shui</i> , that is described in <b>Environmental Social Science</b> but does not play such an important role.
<b>Direction/ orientation</b>	The building's direction (as determined by compass directions) reveals a lot about the personality of the building and how it affects its occupants.		The direction or orientation is determined by practicalities and the best sun direction in the Northern and Southern Hemisphere.	Where in the East <i>feng shui</i> practitioners have an input in the direction a building faces, in the West the direction a building is facing is a given.
<b>The Bagua</b>	A map used to map a space to determine how different sections correspond to different aspects of one's life.		From an <b>Environmental Social Science</b> perspective, the art of placement is also an important concept. Worst possible position for a kitchen will be north-west (student note: adapted for the Southern Hemisphere) if the occupants work full day. While already stressed out from the day's activities, the evening sun will add glare and heat when preparing dinner, which can create agitation and even hostility. Where this differs from Black Hat <i>Feng shui</i> , is that in Environmental Social Science it is customised and in Black Hat <i>Feng shui</i> it is fixed according to the Bagua.	Where this differs from Black Hat <i>Feng shui</i> , is that in <b>Environmental Social Science</b> it is customised and in Black Hat <i>Feng shui</i> it is fixed according to the Bagua.



## Chapter 4

### 4. DESIGN PRINCIPLES

*(A) well-designed workplace can be – indeed should be – a tool to boost productivity and efficiency, and enhance worker satisfaction”.*  
Obata, 1987, p. 57

#### 4.1 INTRODUCTION

In the following section, the practical application of *feng shui* office design elements will be discussed. Unless otherwise stated, the discussion on *feng shui* design is mainly based on the works of Hale and Evans (2007), Hale (2000), Smith and Stewart (2006), Brown (2005) and Collins (2003). Current scientific research will be discussed, indicating where research supports *feng shui* principles, where it contradicts the principles or where evidence is absent. Symbolic connotations are also discussed where applicable (based on the works of O’Connell and Airey, 2007 and Wilkinson [Ed.], 2008).

According to Diamond (2004) there are four components to a *feng shui* audit, namely:

1. **Time:** When a building was built, a semi-permanent energy (*ch’i*) is created that can also change when a building is remodelled.
2. **Orientation:** The building’s direction (as determined by compass directions) reveals a lot about the characteristics of the building and how it affects its occupants.
3. **Environment:** The way the total natural and man-made environment interacts with people, the interior and the exterior.
4. **People:** People differ and what may be a healthy, stimulating environment for one person, may be detrimental to another.

These four aspects are equally applicable to any design culture - although the approach and principles can differ from *feng shui*. As indicated in previous chapters (and further illustrated in this chapter) from an **Environmental Social Science** perspective, the users of buildings are central to any design, the environment is critical and time is perhaps not always valued as much as it should be, but in the words of

Cattermole (2008, p. 17): “(w)hatever a building’s age, it should still tell us something meaningful about the moment of its completion”. From ancient times the orientation of the building played from ancient times an important role. Headley (2008, p. 7) quotes writings from Vitruvius (regarded as the father of architecture, in the 1<sup>st</sup> century BC): “*The lines of houses must therefore be directed away from the quarters from which the wind blows, so that as they come in they may strike against the angles of the blocks and their force thus be broken and dispersed*”.

Marie Elena Rigo (Los Angeles-based interior designer and *feng shui* specialist – interview quoted in Berson, 2006) mentions four overarching aspects to be changed in an office space to make it alive and inviting, namely:

1. **Organise** – get rid of clutter and keep surfaces clear.
2. **Re-arrange** – to be in the *commanding position* (see paragraph 3.4.2.2).
3. **Brighten-up** – change light bulbs to full spectrum, use desk and floor lights instead of fluorescent lights and add warm colours such as red, orange and yellow in for example furnishings, wall paint and décor elements.
4. **Revitalise** – Place a tree or plant in a prominent spot, open windows or use an air purifier. Lagatree (1997) adds wind chimes, flowers and a bowl of goldfish. The same author adds that “*living things create a harmonious work environment and imports the benefits of healthy smooth flowing ch’i*” (Lagatree, 1997, p. 28).

The principle of keeping things simple is a universal design principle, namely the 80/20 rule: “(n)oncritical functions that are part of the less-important 80 percent should be minimized or even removed altogether from the design” (Lidwell, Holden & Butler, 2003, p. 12).

In the West, *feng shui* is neither widely used in the placement of a building nor in the design of the building. As mentioned in paragraph 3.2, the *feng shui* consultant in the West is therefore more often challenged by a given situation, compared to the Orient where *feng shui* principles are incorporated from the planning stages.

Although the location of a building is often fixed and a given, the internal layout can be changed to a certain extent. The goal is to create an environment in which people see themselves as complete (Smith & Stewart, 2006).

Critically important in any discussion on design, are **sick building syndrome** and **ergonomics**. Taking the important principles of harmony and balance of *feng shui* into consideration, a sick building would be the ultimate to prevent. Creating comfort by taking ergonomic principles into consideration would be the ultimate to achieve. *Feng shui* design principles are closely linked to research and literature on sick building syndrome and ergonomics and the principles of these will be discussed after the presentation of the design elements.

## 4.2. DESIGN ELEMENTS

### 4.2.1. Location of the building/site

*Feng shui* gives a new meaning to the traditional saying that the three most important aspects determining the desirability of a property are location, location, location. The importance of location is not only restricted to *feng shui*. Many cultures consider how a building is situated on a stand as very important (O'Connell & Airey, 2007). They give the example that homes are often built on sacred sites and hunter gatherers traditionally aligned their houses and communities by visualizing their territories as representing the cosmic creator.

According to Brown (2005), Hale (2000) and Hale and Evans (2007):

- One would preferably have a taller building at the **back** (the *Tortoise* in *feng shui* – symbolising the world [O'Connell & Airey, 2007]);
- with supportive buildings on both sides:
  - with the building on the **right** taller (the *Dragon* in *feng shui* – symbolising awe-inspiring power (Wilkinson [Ed.], 2008)
  - than on the **left** when facing the building (the *Tiger* in *feng shui* – symbolising courage and strength (Wilkinson [Ed.], 2008). If this is not the case, trees, walls and fences can take over this role.

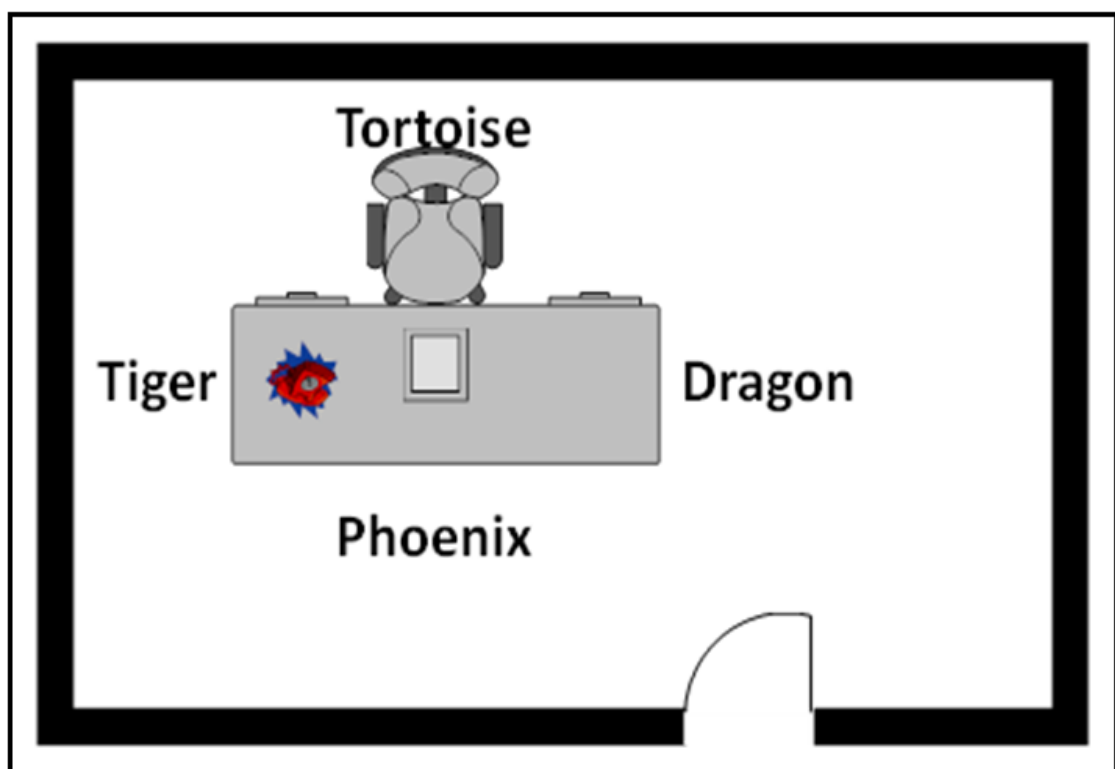
This is known as the Four Mystical or Symbolic Animal Theory<sup>6</sup>.

The **front** of the building should be marked by a front boundary e.g. a wall, a fence or a sign with the company's name (the *Phoenix* in *feng shui* – symbolising virtue, grace, wealth and power [O'Connell & Airey, 2007]).

The theory is sometimes called the Five Animal Theory, including the “snake” – the central place representing the actual building, house or a person occupying the business chair. It is a seat of power (<http://www.healingwithbalance.com/feng-shui/introduction/theory-of-5-animals.html>).

This theory is also applied to interior location as illustrated in Figure 4.1

**Figure 4.1 Five Animal Theory applied in the office** <sup>7</sup>



In paragraph 3.4.1.3 the elements in a neighbourhood which may have an influence on the energy flow (*ch'i*) and balance (as reported by Smith & Stewart, 2006) were

<sup>6</sup> The word “theory” is used in *feng shui* to describe various suppositions.

<sup>7</sup> <http://www.healingwithbalance.com/feng-shui/introduction/theory-of-5-animals.html>

listed. Apart from taking these elements into account (either avoiding them or implementing corrective action), according to Brown (2005) an unfavourable location would be typified by for example vandalised buildings, a rundown neighbourhood and an area with no vegetation or where vegetation does not thrive. Smith and Stewart (2006) mention that in addition to noting the psychological impression that the neighbourhood may have on residents, employees, clients and customers, the energy (*ch'i*) of the area also needs to be analysed - is it very *yin*, very *yang*, or is it balanced? The level of energy (*ch'i*) which is needed is determined by the *primary purpose* of the building.

Smith and Stewart (2006) give the example of having a site surrounded by a church on one side, a school on the other and a cemetery across the street. These sites may be empty most of the time, surrounding the site with low energy (*ch'i*) (*yin*). If more energy (*ch'i*) is required (*yang*), occupied neighbouring areas compatible with the *primary purpose* of the site will be required.

Threatening features, structures or objects in the environment may create a feeling of too much hostile or overwhelming *yang* energy (*ch'i*) (Smith & Stewart, 2006). According to Brown (2005) and Smith and Stewart (2006) threatening features include sharp corners of adjacent or opposing buildings, glare from glass buildings, satellite dishes, flag poles and decorative features pointing at the office. Smith and Stewart (2006) state that an old, dark, large bridge that looms over a building will create an uneasy feeling in the residents, or a major road that is aimed directly at an office building will disturb the productivity of the employees. Hale (2000) and Hale and Evans (2007) give an example of how serious *feng shui* is regarded in the East. The Bank of China design was such that its corners directed “*poison arrows*” of negative energy (*ch'i*) at its main rival the Hong Kong and Shanghai Bank. The Hong Kong and Shanghai Bank reacted by installing mirrored glass to symbolically direct the negative energy (*ch'i*) back. According to the same authors another aggressive measure is to point cannons at rivals, who then respond by installing larger cannons to point back. But it should be borne in mind that not everybody in the Orient believes in *feng shui* (see also paragraph 3.2).

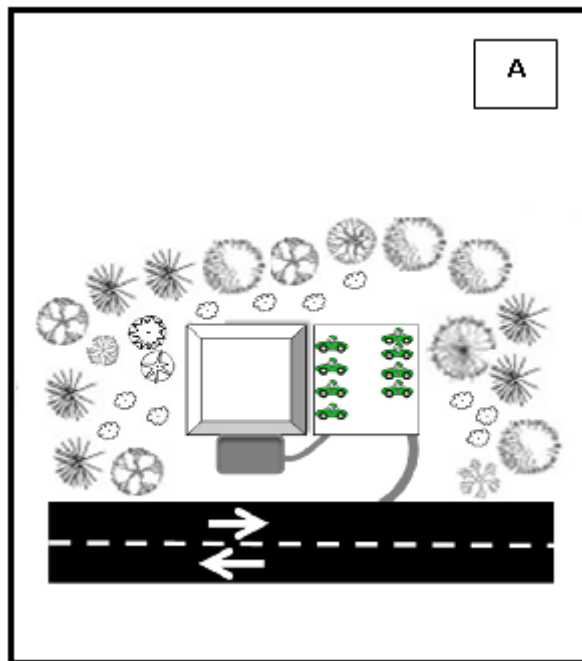
Roads are a major source of energy (*ch'i*) for a property and buildings should be located so that the maximum amount of energy (*ch'i*) is coming in the direction of the site (Smith & Stewart, 2006).

The basic principle of access to a space is that communication channels should be open (Hale & Evans, 2007 and Hale, 2000) and part of this is that there should be easy access to the site (also supported by the universal design principle of accessibility as described in paragraph 3.2). Smith and Stewart (2006, pp. 126-127), Hale and Evans (2007, pp. 206-207) and Hale (2000, pp. 38-39) provide specific examples of how roads may influence energy (*ch'i*).

### **Favourable positions**

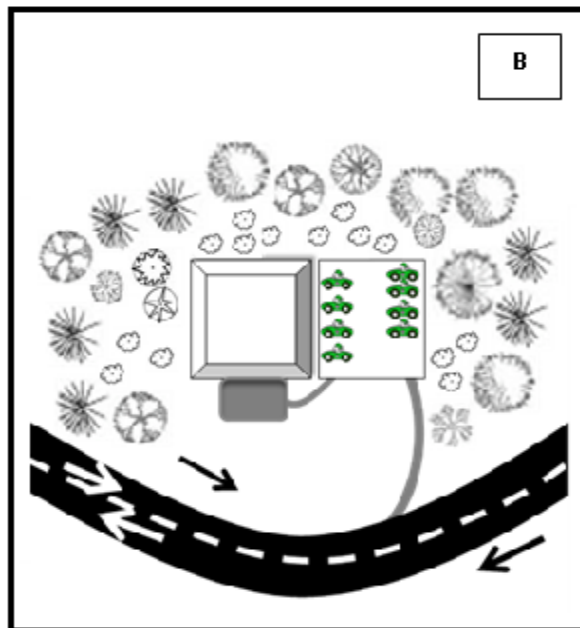
1. Roads that go **straight by the building** and bring energy (*ch'i*) to the property from both directions results in positive energy flow (*ch'i*).

**Figure 4.2 Road straight by building**



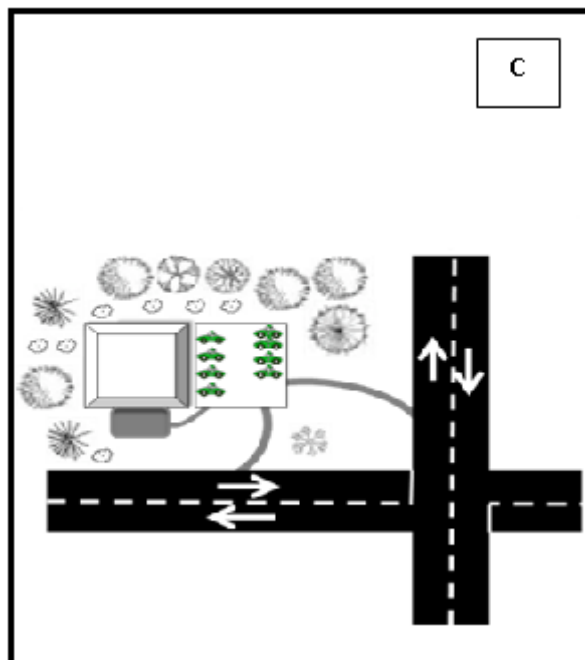
2. Roads **curving around** the building, create the feeling that the energy (*ch'i*) encompasses the structure is the most auspicious energy flow (*ch'i*).

**Figure 4.3 Roads curving around building**



3. Being at **crossroads** is a good position as traffic approaches from both sides.

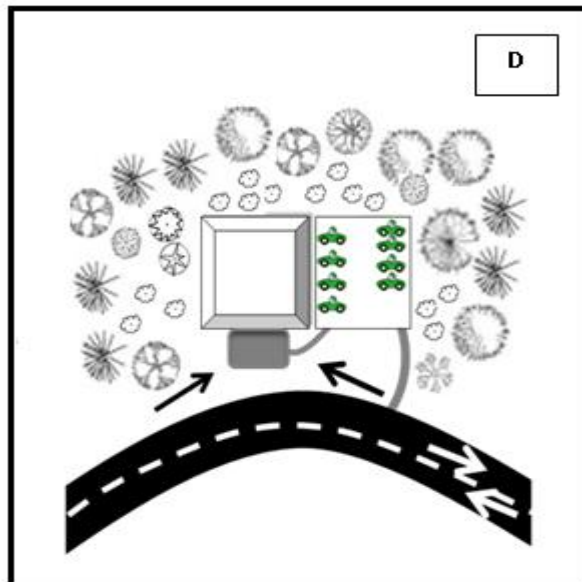
**Figure 4.4 Crossroads**



### Unfavourable positions

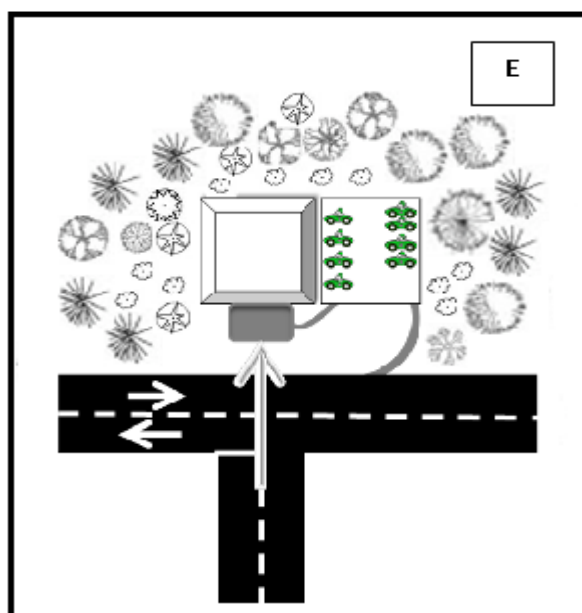
- Roads **curving towards** the building and appear to bring the energy (*ch'i*) towards the building, but then take the energy (*ch'i*) away.

**Figure 4.5 Roads curving towards building**



- Roads approaching the building head-on at the **T-junction** are confrontational and bring forceful energy (*ch'i*) to the property. Occupants of a building at the end of T-junction with traffic travelling straight towards them may feel under threat.

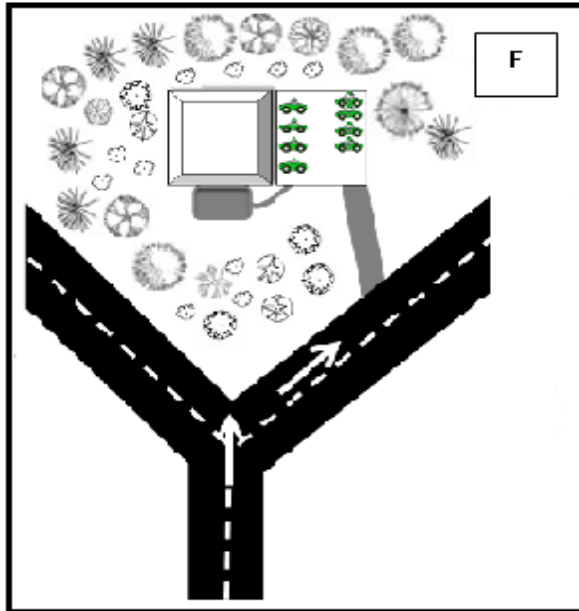
**Figure 4.6 T-junction**





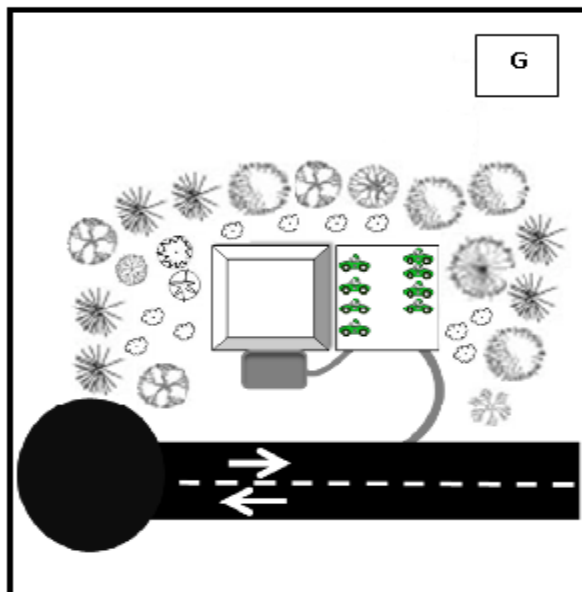
6. Roads creating a **Y-junction** in which the building is in the crux of the Y, may give the feeling that the energy (*ch'i*) comes too forcefully towards the building and then bypasses it.

**Figure 4.7 Y-junction**



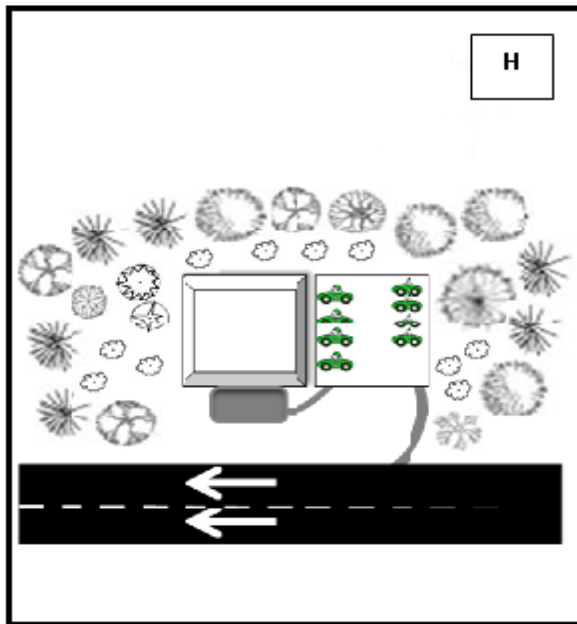
7. The building is in a **cul-de-sac** where the energy (*ch'i*) is low, stagnant or, depending upon the location on the cul-de-sac, is confrontational. A cul-de-sac is in general not a good position since parking could be restricted.

**Figure 4.8 Cul-de-sac**



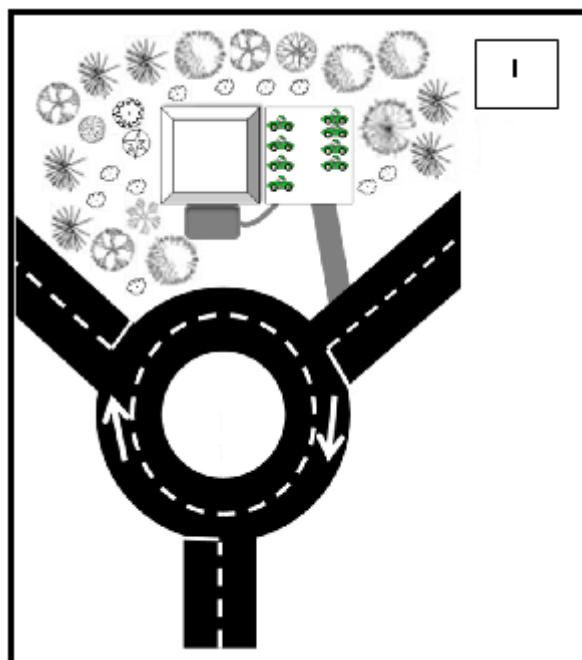
8. The building is **on a one-way** street that sends only half of the road's energy (*ch'i*) moving toward the building or away from it.
9. The building is **facing a one-way** street that is taking energy (*ch'i*) toward the business centre thus not bringing energy (*ch'i*) from the business centre toward the building.

**Figure 4.9 One way street**



10. At a **roundabout** energy (*ch'i*) is constantly passing by – unable to stop or collect there.

**Figure 4.10 Roundabout**



11. A **peninsula** position is unstable.
12. **Businesses near busy urban freeways** will suffer if adequate parking facilities are not available.

**Location: Perspectives and findings in the Environmental Social Sciences:**

From an Environmental Social Sciences perspective, location is equally important. According to Dutton (2003) habitat selection is one of the most important considerations in the survival of any organism - particularly with an eye towards potential food and predators. There is a general preference for savannahs with water; open and wooded spaces (providing places for humans and game to hide); trees that fork near the ground (providing escape possibilities with fruiting potential a meter or two from the ground); vistas including a path or river that bends out of view and invites exploration; the presence or implication of game animals; and variegated cloud patterns.

Although Halpern (1995) mentions implications of various road layouts in the residential context, the effects mentioned can most probably be generalized to the work environment. Cul-de-sacs and short narrow streets lead to an increased sense for community and belonging. It can also cause tension between need for privacy and friendly neighbourhood, can be too intimate for example for communities who are seeking privacy (e.g. middle class) or non-homogenous communities. People living in longer wider streets or main thoroughfares interact less and are more unfriendly. The traffic is noisier and noise reduces helping behaviour. (Halpern, 1995, p. 122). He also mentions that the physical isolation of dwellings (e.g. if a dwelling in a U-design faces outwards and not inwards, the number of passive contacts and friendships will be significantly lower (Halpern, 1995, p. 124). This can apply to the location of both buildings and offices.

Today, like in earlier periods, people employ natural elements to make them feel more secure. To protect ancient strongholds, they were built on hard-to-reach land (e.g. on an island or along the face of a cliff), or defensive obstacles were built around buildings (e.g. moats, earthen mounds or walls or spiked fences) with additional

protection such as water or thorny vegetation (Kopec, 2006). Lidwell et al. (2010, p. 36) describes the Biophilia effect as one of the universal design principles – nature views and imagery reduce stress and enhance focus and concentration.

Nasar (1990) states that desirable city districts have features related to naturalness, good upkeep, orderly appearance, openness and historical or social significance. These all influence consumers' willingness to do business in the area (Bell, 1999). And from this one can deduce that it will also influence employees' willingness to work in an area. Mixing commercial and residential areas can also have negative effects that can lead to an increase in stress, aggression, pollution and demand for transport. As a result traffic will increase, more strangers enter the area and therefore the fear of crime will increase which in turn will lead to a decrease in social cohesion (Cassidy, 1997).

There are various psychological models or theories trying to explain human motivation in location selection, namely Orian's Savannah theory, Kaplan and Kaplan's Information Processing theory, Ulrich's Psycho-evolutionary model, Appleton's Prospect-Refuge theory and Wilson and Kelling's Broken Window theory.

Orian's Savannah theory postulates that there is a preference for savannah-like landscapes with groups of trees, views of rivers and lakes and vista points affording a view of the whole area (Hunziker, Buchecker & Hartig, 2007). Kaplan and Kaplan's Information Processing theory analyses landscape perceptions in terms of complexity and mystery (relates to the need to gather information) and coherence and legibility (relates to the need to make sense of the information gathered) (Hunziker et al. 2007). Ulrich's Psycho-evolutionary model of affective and aesthetic response to the environment, assumes inter alia affective responses to certain visual configurations. The course of human evolution caused people today to be biologically prepared to prefer these configurations. Affective reactions are evoked inter alia by a scene's complexity, focality, depth and ground surface texture. (Hunziker et al. 2007).

### **The prospect-refuge theory**

The selection of a location can be explained by the prospect-refuge theory. According to this theory, people feel most comfortable in an environment where, while they can survey their surroundings, they have an area where they can quickly retreat and hide if necessary (Lidwell et al., 2003, p. 156). “*Prospect-refuge theory postulates that, because the ability to see without being seen is an intermediate step in the satisfaction of many of those [biological] needs, the capacity of an environment to ensure the achievement of this becomes a more immediate source of aesthetic satisfaction*” (Appleton, 1975b, p. 73).

The most preferred environments are those where there is a balance between refuge and prospects and these environments are also regarded as more aesthetic. Preference for these elements is more prevalent where an environment is perceived to be potentially dangerous. The prospect-refuge principle suggests that people prefer (Lidwell et al., 2003, p. 156):

- the edges above middles of spaces;
- spaces with protection overhead (e.g. ceilings or covers);
- spaces with few access points, i.e. protected at back and side; and
- spaces with a sense of safety and concealment.

Edge settings are for example edges between open and closed areas such as plains and forests because open areas afford prospect (a visual range for detecting food or danger at a distance) and closed areas afford refuge (a safe haven or shelter) (Appleton, 1975b; Ruddel & Hammitt, 1987).

According to Kopec (2006, p. 83) the preference for areas near safety, with visual access to open space, help to explain why properties near parks and beaches are highly valued and why the ability to open and close doors and windows is important in primary and secondary spaces. Natural landscaping and green spaces provide psychological benefits and positive functionality (Kopec, 2006, p. 138).

Both the prospect-refuge and savannah preference is based on evolutionary psychology – namely that both savannahs and living on the edge between open and closed areas gave humans a survival advantage (Appleton, 1975b; Lidwell et al., 2003).

Designers, developers, architects and city planners in “Europe, Asia and the Americas” recognise the importance of including greenscaping in communities, public buildings and housing developments (Kopec, 2006, p. 138). Natural views are favoured and according to Kopec (2006) the logic is simple – trees provide oxygen, relief from heat, glare and visual stimulation. Apart from protection, green spaces also provide health benefits e.g. leafy vegetation absorbs pollution (Kopec, 2006, p. 139).

### **Wilson and Kelling’s Broken Window theory**

Also important is the condition of the area and the building. The implication of the Wilson and Kelling’s Broken Window theory is that a single broken window can lead to the decline and fall of an entire community According to Kopec (2006, p. 41):

- Increased evidence of decay over time in an area (e.g. broken windows, rundown buildings) cause people who live there to become fearful, withdrawn and unwilling to maintain social order or to amend physical degradation.
- As residents continue to withdraw, harassment, vandalism and other crimes escalate and offenders are attracted by what is seen as a safe site for criminal behaviour.

Measures to make inhabitants feel more secure, can actually make it more vulnerable for crime. The less visible a building is from the road (e.g. set back, protected by for example fences, shrubs, the more vulnerable it is to burglars (Kopec, 2006, p. 114) and heavily barred windows can indicate risk and increase danger (Kopec, 2006, p. 281).

### **4.2.2. The front of the building and first impressions**

According to Hale (2000) and Hale and Evans (2007) a low wall or fence carrying the company name should be in front of a building and if a tall barrier is required for security reasons, palisades rather than a solid fence would be preferred.

According to Smith and Stewart (2006, p. 92) “*(a)lthough signage is always intended to convey information, its most important ... purpose is to communicate a psychological statement about the person, company, town, or other entity that is*

*represented by the sign*". The size of the sign and the letters of the name communicate a message as to how the entity views itself. It all forms part of the energy (*ch'i*) and image of an institution and should be consistent with the desired energy (*ch'i*) of the business.

One must be able to recognise the right place at once, the signage should be easily read at a distance, the lettering should be legible and the signs must be proportional to the size of the building (Hale, 2000; Hale & Evans, 2007; Smith & Stewart, 2006). There must be signs outside and on the building, and if the building is shared with other occupants, also inside the lift and where the lift opens (Hale, 2000; Hale & Evans, 2007).

#### **Territory: Perspectives and findings in the Environmental Social Sciences:**

By marking a territory, an individual indicates possession, defence as well as the exclusive use of the space (Kopec, 2006, p. 63). It allows inhabitants to control their environment and deter criminal activity (Lidwell et al., 2003, p. 158) and has three features: clearly defined spaces of ownership, easy monitoring of the environment and symbolic (or real) barriers to indicate the defensible space. Humans, in general are conditioned to recognise numerous signs and symbols indicating territoriality (Kopec, 2006, p. 65). Through defensible space markers (such as physical fences or locks, or symbolic such as signs, gardens, borders, family photos in offices) "*mutually acceptable ground rules are established and social behaviours can be transacted without confusion*" (Kopec, 2006, p. 63).

Defensible space measures (e.g. security systems, devices and signage) can also result in people feeling at risk (Kopec, 2006, p. 283). According to Kopec (2006, p. 283) planners and designers should devise creative strategies to employ defensible space markers without making the general public feel at risk.

Inhabitants have the right to use a space and are also in command of the social knowledge deployed in a space. Visitors have provisional rights to use the space and are subject to the social knowledge deployed in a space (Peponis & Wineman, 2002, p. 283).

### 4.2.3. Entrances and reception area

The entrance and reception area create the first impressions a visitor will get of the company. A clean, bright and welcoming reception area may encourage clients to think well of an organization and create a positive atmosphere for employees. In contrast a dark and scruffy reception may indicate a shoddy or failing company to clients and deplete employees' energy before the start of the day (Hale, 2000; Hale & Evans, 2006). The reception area is a place of transition leading to other doors and passageways – it symbolises a moment of choice in life where several doors (practically and metaphorically) are open to new possibilities (Wilkinson [Ed.], 2008).

The entrance should be in proportion to the building and invite visitors in. Doors should be able to open easily and if the entrance consists of double doors, both should be open as not to restrict the flow of energy (*ch'i*) and cause a dark stale area behind the closed door.

The entrance as well as the reception area should be well-maintained, clean and uncluttered. A window opposite the entrance may cause energy (*ch'i*)/air to go straight through (Hale, 2000; Hale & Evans, 2007; Smith & Stewart, 2007). When entering a space, the intention is to be inside that space and if a window is directly opposite the door that is used to enter the room the person's attention is pulled through the space out of the window. This may divert the person from the intended purpose. The problem may be avoided by not placing the windows in a direct line opposite the door. A plant or other attractive object in front of the window or pulling the drapes or lowering the blinds may also prevent or help to solve the problem (Smith & Stewart, 2006).

According to (Hale, 2000, p. 71; Hale & Evans, 2007, p. 239) the following may be added to a reception area:

- Fans, plants and water features play an important role, fresh air should circulate. Water features outside can be reflected by mirrors in the reception area.
- Mirrors should be positioned to one side of the entrance so that *ch'i* should not be reflected back through the door.



- Fish tanks (aquarium with a water pump) – in China fish symbolise wealth (and spiritual wisdom, fertility and regeneration, according to Wilkinson [Ed.], 2008). Tiny darting fish create an active energy (*ch'i*) useful in commercial companies whilst larger, slower-moving sheaves create a calm atmosphere which may be useful in e.g. health practices. According to Lagatree (1997) moving water symbolises cash flow and fish encourage abundance. .

Energy (*ch'i*) flow in reception areas is very important and employees should be able to move quickly to their work areas via lifts and staircases.

**Lobby: Perspectives and findings in the Environmental Social Sciences:**

From an Environmental Social Science point of view, the lobby (Kopec, 2006, p. 260):

1. is a strategic junction node (a point where activity converges for different purposes) as the point of entry and departure,
2. is a dual concentration node (an area where people gather for a common purpose, and
3. establishes the environment's image as it is the first space a person experiences upon entering.

Ideally one would like to create or inspire positive emotions (Kopec, 2006, p. 260). A good entry point should consist of minimal barriers (e.g. people standing at the door, poorly maintained building), points of prospect (ability to orientate oneself and survey the environment) and progressive lures (pull people through entry point to incrementally approach and move through entry point) (Lidwell et al., 2003). *“People do judge books by their covers, Internet sites by their first pages, and buildings by their lobbies”* (Lidwell et al., 2003, p. 64).

**Entrance doors**

According to Kopec (2006, p. 281), many designers opt to retain the elegance and sophistication associated with revolving doors or the grandeur associated with tall heavy doors, because of the symbolism associated with entry and exit points. The most accessible doors for people with limited mobility are double doors with a trigger sensor that slides it open. Accessibility is often improved by locating an automated sliding door next to the primary door (Kopec, 2006, p. 281).

**Way finding:** According to Kopec (2006, p. 91) without good way finding measures built into a design, people may experience difficulty in finding destinations quickly and efficiently and this in turn may influence their overall perceptions of the space (Kopec, 2006, p. 260). According to Lidwell et al. (2003) way finding should provide the following:

- orientating one's location relative to nearby objects and destinations,
- minimizing the number of navigational choices,
- providing signs or prompts at decision points and giving destinations clear and
- consistent identities.

The time required to make a decision is directly related to the number of options that need to be considered (Hick's Law) (Lidwell et al., 2003, p. 102). This has a direct impact on way finding and the use of signage.

According to Weisman (1981) way finding measures built into a design can be:

- Visual access – refers to visibility e.g. clear line of sight.
- Architectural delineation – refers to separation of one area to another via architectural features e.g. thresholds, variation in ceiling height.
- Signage and numbering systems – enabling people to match displayed codes with messages brought with them (e.g. the room number of a hospital ward) or obtained on site (e.g. information centres and you-are-here maps).
- Building layout – logical spatial progression and organisation e.g. one will find women's underwear near women's apparel and not near appliances.

#### **4.2.4. Reception plan**

According to Smith and Stewart (2007) the size and shape of the lobby create an immediate impression. The Golden Rectangle<sup>8</sup> can be used as a guideline to determine the size and ceiling height proportional to the human scale. The size of the reception area should be determined by the traffic it needs to handle at any one time

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<sup>8</sup> See 4.2.11

on a regular basis. People should not feel crowded or lost in the space. A very large space can make a person feel less significant. The author is of the opinion that this can of course be used effectively if the purpose is to make people feel insignificant (e.g. large corporate, large cathedrals).

**Room form and size: Perspectives and findings in the Environmental Social Sciences:**

In contrast rooms that are squarer than rectangle (in contrast to the Golden Rectangle) are preferred (Nasar, 1981). It decreases the feeling of crowding (Kopec, 2006).

**Reception desk**

The reception desk should be to the right as people enter, because the most natural movement of a person is a curve to the right. Placing the desk directly in front of the entrance creates an uncomfortable and confrontational feeling. If the desk is too close to the entrance, a person is on top of, or immediately past it too quickly, creating an uncomfortable feeling. Angling the desk slightly in the direction of the entrance, the receptionist appears even more welcoming and the angle helps break up the many inevitable straight lines in the space (Smith & Stewart, 2007). Smith and Stewart (2007) also advise against putting stairs, elevators and cloak rooms in the centre of a building as it creates a strong energy (*ch'i*) pull.

The reception desk should not be too close to or opposite the entrance and the receptionist's back should be against a solid wall so as not to be startled from behind (Hale, 2000; Hale & Evans, 2007).

**Placement of the reception desk: Perspectives and findings in the Environmental Social Sciences:**

The placement of the reception desk on the right hand side makes sense from an Environmental Social Science perspective. A very early study in museums established a right side bias – people tend to better see and remember items placed on the right side (Melton, 1935 as cited in Kopec, 2006).

#### 4.2.5. Lobby area

##### **Lobby wall colour and lighting**

The colours in the lobby should convey the required energy (*ch'i*). The best colours are slightly warm and create an exciting energy (*ch'i*), but the colour value should depend on the scale of the lobby. The lighting should be warm in temperature (warm lighting helps to compensate for the transition of coming from the outdoors into a darker interior space) and evenly spread throughout the entire area (dark pools on the floor are disconcerting) (Smith & Stewart, 2006).

##### **Lobby plants and furniture**

Trees should be placed in “*dead*” corners, table lamps add warmth to a space and U-shaped waiting chairs create a warm and welcoming embrace. Rounding the corners and edges of the furniture, creates a softer and more inviting environment. By balancing colours and elements with interesting materials, finishes, and fabrics the impersonal lobby space should get a more inviting feeling (Smith & Stewart, 2006).

##### **Lobby Signage**

Directional signage should be simple, easy to locate, and easy to read. Elevators should be numbered in a culturally appropriate way e.g. the numbering in the West should be from left to right, because that is the way Westerners read and would expect it to be numbered (Smith & Stewart, 2006).

##### **Signage: Perspectives and findings in the Environmental Social Sciences:**

According to Kopec (2006, p. 304) signage should be used strategically and left to the minimum. It should only be used when other forms of environmental communication cannot be used. A few well designed strategically placed signs will have a greater positive impact than signs at every corner or turn.

#### 4.2.6. Materials

##### Air-conditioning

According to Hale (2000) and Hale and Evans (2007) air conditioning is regarded as negative *feng shui*. Dry air-conditioning may result in respiratory problems, throat irritations, tiredness and headaches. If a cooling tank is added, bacteria and viruses may build-up in the water.

##### **Air-conditioning: Perspectives and findings in the Environmental Social Sciences:**

As an example, Morris and Dennison (1995), reports on a study which supports the negative effects of air conditioning. They report that in a study that compared air-conditioned libraries and naturally ventilated libraries, 40 percent of employees working in air-conditioned libraries were absent six days or more per year compared to 22 percent in naturally ventilated libraries. Thomas-Mobley, Roper, Oberle (2005) also reports that there are indications that when occupants are dissatisfied with indoor air quality, the overall building satisfaction is low.

The flexibility in manipulating the system is extremely important and the ideal would be to have independent, simple to operate controls for each area (Lang, 1996). Poor ventilation interferes with the body's ability to dissipate heat and can therefore have a negative effect on temperature. Temperature, ventilation and humidity depend on factors such as the configuration and materials in a building, the amount of window glazing, the size and volume of the space, the number of occupants, their current state of activity and the heating and cooling systems (Kopec, 2006, p. 194).

##### **Materials**

Human beings function best when they are in the same range of vibrations as the earth (Hale, 2000; Hale & Evans, 2007). Hale (2000) and Hale and Evans (2007) continue that the earth's frequency is 8-12 hertz and steel frames, steel reinforced foundations, pipes and ducts in buildings disturb the earth's vibration. Natural materials in the built environment may improve this (Hale & Evans, 2007) and create a healthy and more natural environment (Smith & Stewart, 2006). The supply of fresh air and

plants are useful in extracting harmful substances from the atmosphere and at least one plant should be at a desk – especially at computers (Hale, 2000; Hale & Evans, 2007). Synthetic materials are associated with health risks and should be kept to a minimum, especially where people spend a considerable amount of time (Hale, 2000; Hale & Evans, 2007; Smith & Stewart, 2006).<sup>9</sup>

## **Flooring**

According to Smith and Stewart (2006) hard surfaces are associated with the harshness of the outside world or of large public areas. Stepping for example from a hallway with wood or a tight loop carpet into an office with a more plush cut pile carpet should give the immediate shift of energy (*ch'i*) from “*public and practical*” to “*comfortable and private*” (Smith & Stewart, 2006, p. 78).

The finish of a floor may also affect tension levels. A wood surface immediately appears solid and supportive, while a carpet conveys the more inviting feel of a grassy lawn and may cause the least tension. On the other hand, a highly polished or shiny flooring surface may create the feeling that the surface is wet or slick and can make one feel uncomfortable (it may even feel dangerous). If the flooring is a shiny black or dark blue surface, it may come across subliminally as water. A concrete or dull hard surface may give the sensation of walking over rocks, which is not the most comfortable path (Smith & Stewart, 2006).

## **Furniture, walls and curtains**

According to Smith and Stewart (2006) one wants furniture that will look welcoming and balance everyday harshness and coldness, metaphorically redirecting the occupant’s energy in a more gentle direction. Chrome and glass chairs and tables may have a much colder and more aloof feeling compared to furniture from wood and fabrics. The pattern of the furniture fabric, wall paper and curtains should be consistent with the *primary purpose* of the space and should convey a specific energy

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<sup>9</sup> Also see 4.1.12 and discussion of sick building syndrome, paragraph 4.2

(*ch'i*). A striped pattern may vibrate and add a feeling of excitement, a bold check may appear chaotic and a large print may appear overwhelming.

A wall symbolises strength, privacy and containment (Wilkinson [Ed.], 2008), and curtains symbolise the separation between different realms – either opening or concealing them (O’Connell & Airey, 2007). Concrete, ceramic or stone walls can convey a hardness or coldness and if the texture is rough, it may create the impression that one needs to be careful which can make people feel uncomfortable in the space. By comparison, wooden wall panelling would add warmth, but if it goes from ceiling to floor it may (depending on the colour) make a small room feel smaller (Smith & Stewart, 2006).

Different materials are associated with the five elements and are given in the following table.

**Table 4.1 Using the five elements to select materials** (Smith & Stewart, 2006, p. 82)

<p><b>Earth</b></p> 	<p>Ceramics, tiles and other similar claylike substances as well as carpets that represent the feeling of the land/earth</p>
<p><b>Metal</b></p> 	<p>In chrome, steel, iron and other forms of metal, as well as concrete and other earth surfaces</p>
<p><b>Water</b></p> 	<p>In the reflective nature of glass or other shiny dark surfaces</p>
<p><b>Wood</b></p> 	<p>In the many varieties of actual wood or wood imitations</p>
<p><b>Fire</b></p> 	<p>Does not have a material associated with it, although fireplace, stove or candles represents fire. Usually fire elements are represented by colour and objects</p>

## **Furniture**

### **Electrical and technological equipment**

According to Hale (2000) and Hale and Evans (2007) electromagnetic radiation from electrical equipment is a health hazard.

- No desks should be placed near the area where the main power enters the building.
- Do not face or sit with one's back to the rear of a monitor.
- The toner of photocopiers gives off chemical emissions which can be carcinogenic.

### **Desks, workstations and work areas**

According to Lagatree (1997) it is almost impossible to work well with one's back to the door. Sitting with one's back to a door or a window may cause the employee to feel uneasy and nervous (see also *Commanding Position*, paragraph 3.4.2.2) and violates the most important principle in *feng shui* namely to feel comfortable. The same applies to open-plan offices. A strategically placed mirror will enable the occupant to see what is behind and to open up the space. (Hale, 2000; Hale & Evans, 2007; Smith & Stewart, 2006). Lagatree (1997, p. 28) quotes Kirsten Frederickson (an art director): “(t)here's paranoid energy in not knowing what's going on behind your back. If you work that way, your paranoia will be felt by co-workers”.

By facing the door the occupant may have a greater sense of ease and control. The person sitting the furthest from the door will be in the *commanding position* and feel more important and be more comfortable than somebody sitting closer to the door. By not sitting near the door, the employee should be shielded from the direct energy (*ch'i*) coming through the door opening (Smith & Stewart, 2006) and will not be distracted by the hustle and bustle (Lagatree, 1997). Facing the door gives one power and stability (Bohland, 1999).

In open plan offices, panels should be high enough to block the view of staff in an adjacent workstation when sitting, but lower partitions will contribute to more natural



light. Acoustic partitions with sound deadening material should be provided with carpets and plants absorbing some of the sound (Smith & Stewart, 2006).

The best position of a desk is diagonally opposite the door where one can see anyone entering the room. Those directly in line and closest to the door are constantly interrupted. The size of the desk should be in proportion to the user's position in the company. In *feng shui* square and rectangular desks with rounded corners (so as to not point at anybody and not catch anybody as they walk past) are considered the most suitable (Hale, 2000; Hale & Evans, 2007). According to the same authors, round tables do not encourage anyone to sit down (and if so, not for long) and they are ideal for meetings which should be kept short.

**Desk design and position: Perspectives and findings in the Environmental Social Sciences (also see 3.4.2.3, Art of Placement):**

From an Environmental Social Science perspective, the use of smooth and simple lines increase a worker's positive perception of spaces – also enabling people to move about a room safely inter alia by having enough light (Kopec, 2006, p. 244).

In terms of the *commanding position*, according to Canter (1974) people locate themselves in a space according to clear patterns – people in restaurants tend to sit around the periphery rather than in the middle. He also reports on a study by Stiltz and Kamino (Canter, 1974) that people tend to wait out of traffic flow near for example pillars which also provide something to lean against in the absence of seats. This indicates a human preference to be positioned near a solid structure that can afford protection.

**Layout**

Open-plan offices are based on the principle that communication between employees will increase. It allows for flexibility and is less expensive, but it is insufficient in addressing privacy needs as well as acoustic and aural distractions (Kopec, 2006). According to Peponis and Wineman (2002, p. 283) where physical boundaries are removed, stronger behavioural boundaries are erected to ensure that organisational identities are reserved.

## **Furniture and measurement**

In line with the principle of *feng shui* to position ourselves within our environment to our best advantage, *feng shui* authors describe aspects one needs to give attention to, to be aligned with the environment. These principles are in line with ergonomics and are part of the westernised ideas that are incorporated in the Black Hat Sect School of *feng shui*.

According to Hale (2000) and Hale and Evans (2007) furniture should be ergonomically designed, with the positioning of furniture in such a way that the movement of people should not be hindered: there should be no obstacles hindering access, the corners of furniture should be rounded to assist/promote flow and corners should not point to anyone working close by. Some of the aspects Hale (2000) and Hale and Evans (2007) mention to make our environment more comfortable are:

- Keyboards should be at the right height.
- Chairs should have a back support and not be wobbly.
- There should be no sharp corners that can catch a person when walking.
- Cupboards and other furniture should be easy to access.
- Wrist support and other methods should be used to ease Repetitive Strain Injury (RSI).
- Storage units should be at a suitable height to prevent unnecessary bending or stretching. Shelving above head height can be oppressive and create injury.
- Edges of shelves near a chair may create “*poison arrows*” of energy (*ch'i*) and may cause discomfort.
- Cupboards are preferable to open shelves as it makes an office look less cluttered.
- The more shelves the more likely that it may be filled with things that are not really needed.

Mirrors can be placed in small offices to create illusion of space but not where people see themselves while working – depending on the person, it may create a feeling of discomfort.

Rounded furniture (e.g. cabinets, tables, desks) may result in energy (*ch'i*) flowing more smoothly. A round table creates a feeling of equality with no designated power position other than the *commanding position*. Although an oval table or desk has a stronger position of authority at the wide part of the long side of the oval, it is still a more comfortable shape than a square or rectangular table (Smith & Stewart, 2006). Rounded shapes may help balance the straight lines and sharp angles that will inevitably be in every space (Diamond, 2004, p. 23).

**Furniture and measurement: Perspectives and findings in the Environmental Social Sciences:**

Various authors such as Baron, Vander Spek and Young (2006), Beiswinger (1994), Bettendorf (1990), Borsari (1998), Dogette (1995), Kincaid (1999), May, Reed, Schwoerer and Potter (2004), Veitch, Charles and Newsham (2004), Verespej (1994) and Voss (1991) give the ergonomically tested measurements of furniture and ideal postures. Also see the discussion under paragraph 4.3 regarding Ergonomics.

**4.2.7. Structural details**

**Beams and ceilings**

*Ceilings*

According to Hale (2000), Hale and Evans (2007) and Smith and Stewart (2006), beams in the ceiling may have a negative effect on the energy flow (*ch'i*) in the room and resulting in possible discomfort. The premise is that as energy (*ch'i*) flows around the room and hits the beam it is forced down (Smith & Stewart, 2006). Slanted ceilings have a similar effect – it can cause energy (*ch'i*) to accelerate and compress as it circulates around the room and is forced down by the slope of the ceiling (Smith & Stewart, 2006).

The ceiling can also be a cause of discomfort. A very high ceiling can make a person feel less significant. A rough texture may make the ceiling feel heavier and create an uncomfortable feeling. If the light accentuates the roughness and the ceiling is not high, the impression may be created that the ceiling is lower than it actually is - low beams in the ceiling should have a similar effect (Smith & Stewart, 2006).

### ***Beams***

Beams are oppressive when positioned over a desk and is reported to suppress the energy (*ch'i*) beneath it (Hale, 2000; Hale & Evans, 2007) and therefore one should avoid placing a sitting area, desk or bed directly under a beam (Smith & Stewart, 2006). Partitions, filing cabinets, bookcases or large plants can be placed underneath beams to lift the energy (*ch'i*) (Hale, 2000; Hale & Evans, 2007) or the ceiling can be covered by soft, billowing, material with colours that enhance the *primary purpose* (Smith & Stewart, 2006).

Relative size does matter: the height of the ceiling and the size of the beam are both relevant and a 7-foot ceiling with an 8-inch beam should be a greater problem than a 12-foot ceiling with a 12-inch beam (Smith & Stewart, 2006).

### **Ceilings and beams: Perspectives and findings in the Environmental Social Sciences:**

This is in contrast with Environmental Psychology. Kopec (2006) quotes authors such as Baird et al. (1978) and Butler and Steuerwald (1991) that people prefer either flat or sloping ceilings that are higher. Beams can have an influence on the height of the ceiling. Sloping ceilings increase the perception of space and decrease the feeling of crowding (Kopec, 2006).

Lidwell et al. (2010, pp. 38-39) report on the Cathedral Effect – high ceilings promote abstract thinking and creativity and low ceilings concrete and detail oriented thinking. Creative tasks requiring out of the box thinking (such as research and development) would be best in large rooms with high ceilings compared to detail oriented work (such as an operating room) where a smaller room with a lower ceiling would be better. High ceilings would also result in people lingering for longer and would be best in a retail or casino environment and lower ceilings would minimize loitering and would be best for fast food restaurants.

## Columns

It is argued that columns block the flow of energy (*ch'i*) in much the same way as beams (Smith & Stewart, 2006) and people may feel uncomfortable when the edges of straight-sided columns point at where they are sitting (Hale, 2000; Hale & Evans, 2007). Round columns may cause the energy (*ch'i*) to flow smoothly. If they are square or project into a room with a sharp corner, they may create the same feeling of discomfort or illness (Smith & Stewart, 2006).

The effect may be minimised by (Hale, 2000; Hale & Evans, 2007; Smith & Stewart, 2006):

- Disguising or softening the edges by rounding the corners.
- Disguising it with plants, decorative fabric or some other item that is appropriate for the space so that it softens and absorbs the harshness of the energy (*ch'i*) from the sharp corner.
- Place any important piece of furniture, such as a bed, desk, or frequently used chair, as far as possible from the column.

## Staircase

According to Hale (2000) and Hale and Evans (2007) staircases and escalators should not face the front entrance as it may cause energy (*ch'i*) not to circulate properly. According to them a spiral staircase acts as a corkscrew through the building and the solution would be to put large pot plants in terracotta pots at the bottom of spiral staircases to add stability. Staircases in general symbolise steps on the spiritual road to enlightenment and knowledge (Wilkinson [Ed.], 2008). Symbolically a winding staircase (where the upper and lower levels are unseen) is a symbol of the mysterious and a spiral staircase indicates “*a journey fraught with doubt*” (Wilkinson [Ed.], 2008, p. 237).

### **Staircases: Perspectives and findings in the Environmental Social Sciences:**

Most studies done on staircases address safety aspects (for example by the USA National Institute for Safety and Technology (see <http://www.nist.gov>) or how to increase the use of stairs compared to elevators for health reasons (for example Olander & Eves, 2011). According to Brebner (1982) the following should be considered in staircase design:

- Traffic type and volume will determine the width.
- Safety aspects include having handrails, non-skid surfaces, defined stair edges and fire doors.
- Fatigue relates to step height and the length of the stairway. Reducing the distance between steps (landings) can reduce fatigue.

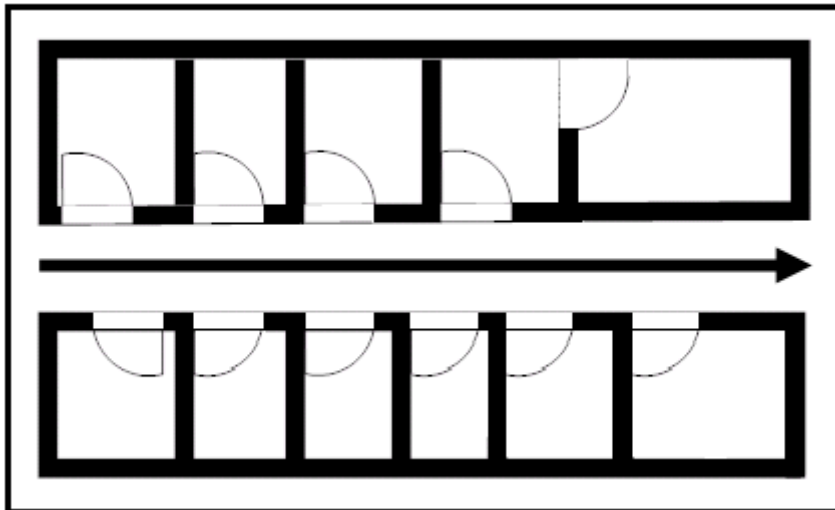
### **Corridors**

According to O'Connell and Airey (2007) a corridor symbolises the twists and the turns of the pathway through life. Long straight corridors are discouraged as it funnels energy (*ch'i*) quickly (Hale, 2000; Hale & Evans, 2007). Energy flow (*ch'i*) through a space impacts on stress levels and behaviour (Smith & Stewart, 2006). According to Angi Ma Wong (quoted in Hendrickson, 2000) straight lines are negative and destructive. Curvy, wavy and wiggly lines are like wind and water and therefore positive.

As discussed in paragraph 3.2, *feng shui* teaches that people need to surround themselves with the energy (*ch'i*), balance, and harmony found in nature. Smith and Stewart (2006) consider that in nature there is no such thing as a straight line, a right angle, or a square edge and when energy (*ch'i*) moves it moves in a curved motion. By designing long, straight corridors and walkways, people are forced to move in an unnatural motion against their natural inclination - a right handed person will lead with the right foot. This may initially pull the person to the right. To compensate for this the direction will be shifted to the left. This result will be a meandering walk, which is not supported by a long straight corridor. Repeated sharp turns in a corridor create uncertainty of what is immediately around the corner and may be unsettling

and is not natural or comfortable. Wider corridors make people feel more comfortable (Smith & Stewart, 2006).

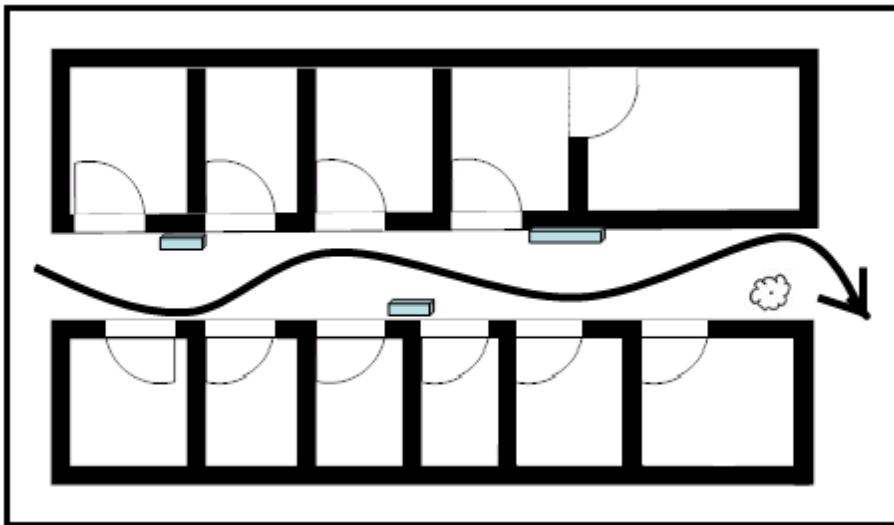
**Figure 4.11 Straight corridor**



The energy (*ch'i*) should be slowed down by for example strategically placing mirrors or landscape views, changes in floor covering or pattern or hanging light fittings to create a meandering route (Hale, 2000; Hale & Evans, 2007). The object placing should be staggered. Smith and Stewart (2006, p. 196) mention the following aspects in corridor design:

- Maintain at least a 1.2 meter clearance between walls and objects. The illusion of a gently curved pathway can be created by alternating the objects such as potted plants on both sides of the corridor.
- A strong curve in the flooring pattern and/or in the ceiling plane or subtle curving patterns in the flooring can create the sense of a natural flow.
- The corridor can be visually expanded into glass-walled conference rooms and workstation areas with low partitions that are no higher than 1.2 meters. By using the same flooring, lighting and wall colours in these areas as in the corridor, a consistent feeling can be created. The feeling of a curved passageway can also be achieved by widening the corridor at workstation areas.

**Figure 4.12 Meandering corridor**



According to Smith and Stewart (2006, p. 197) a corridor will visually shrink if:

- Borders of a different colour or material along one or both sides of the corridor floor are used, because the inclination is not to walk on two surfaces at the same time.
- Different textures on the two walls are used, because one wall may have a more comfortable feel and people may edge away from the less comfortable side. If each side of a long corridor is painted a different colour, it may make it feel less like a tunnel than if the walls are of the same colour value and material.

Corridor lighting levels should be similar to that in the reception or lobby area to create a sense of openness and continuity of similar energy (*ch'i*) levels (Smith & Stewart, 2006).



### **Corridor: Perspectives and findings in the Environmental Social Sciences:**

Although the reasoning and rationale differ, a long corridor is also discouraged from an Environmental Social Science perspective. Kopec (2006) quotes numerous authors such as Baum and Valins (1977), Baum, Aiello and Calesnick (1978), Baum, Davis and Valins, (1979) and Evans et al. (1996) who maintain that long corridors increase the feelings of crowding and that architectural depth will result in less psychological distress and social withdrawal. Corridor design (bedrooms on both sides of corridor) in dormitories (vs. suite design with lounge and bathroom in each suite) with the same density, led to complaints about unwanted social encounters, less control over when, where or with whom interaction might occur, and more likely to report contact as excessive. Group formation was inhibited and corridor residents were more likely to withdraw and avoid contact (Halpern, 1995 reporting on Baum and Valins, 1977).

According to Kopec (2006, p. 259) negative psychological effects of long corridors or hallways can be lessened by placing lounge or cluster suites intermittently along corridors, changing colour schemes, or modifying hallway widths.

Brebner (1982) gives the following design guidelines for corridors:

- The corridor should be well-lit for clear visibility.
- Intruding items such as cabinets, doors opening into corridor should be avoided.
- Noise levels will be determined by the activities taking place in areas adjacent to the corridor
- Signposts should be clear indicating day to day and emergency use.

### **Doors**

A doorway symbolises the divide between the sacred and the profane, the transition from one stage of life to another (Wilkinson [Ed.], 2008), an entrance to another world (for example another room) or another state of being (O'Connell & Airey, 2007). In the Chinese tradition, an open door is thought of as active (*yang*) and a

closed door as passive (*yin*) and the opening and closing of a door represents the “*cosmic dance*” between *yin* and *yang* (O’Connell & Airey, 2007).

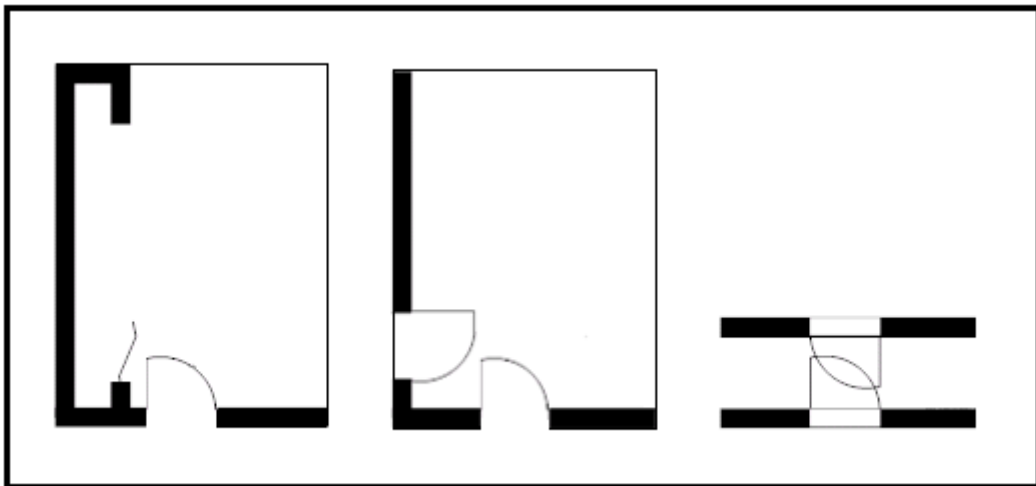
**Pairs of doors.** According to Smith and Stewart (2006) doors are a metaphor for an invitation to enter a space. The width and height of a doorway and the number of doors are subtle indications of the intention of the occupants. Doors that are larger than normal indicate that all are welcome and are effectively used in public buildings and business. Both doors of a double door should be capable of being opened. Dutch doors (where the upper portion of the door can be opened and the bottom part kept closed), does not communicate the same warm welcome of a full door. Where one wants more energy (*ch’i*) to enter, a Dutch door should be replaced or treated as a single unit.

**Door swings.** To enhance the natural flow of energy (*ch’i*) a door should always open inwards and it should pull people in rather than stopping their forward movement. Revolving doors, automatic sliding doors, and doors that swing in both directions assist in energy flow (*ch’i*). A door should open inward to expose the largest or most important part of the room. It is claimed that people entering the room should feel in control as they immediately see the key elements of the space and people inside the room, and should feel comfortable, because they will not be surprised by someone entering (Smith & Stewart, 2006).

**Door handing.** According to Smith and Stewart (2006) the left hand tends to be used for carrying and the right hand for reaching. Whenever possible a right-handed door that opens inwards should be created to expose the most important part of the room.

**Conflicting doors.** “*Conflicting*” doors exist when two doors hit one another if they are opened at the same time and should be avoided. Every time one of the doors is opened, one may experience a subconscious moment of hesitation about whether someone is in the way. This may block the flow of energy (*ch’i*) momentarily (Smith & Stewart, 2006).

**Figure 4.13 Examples of conflicting doors**



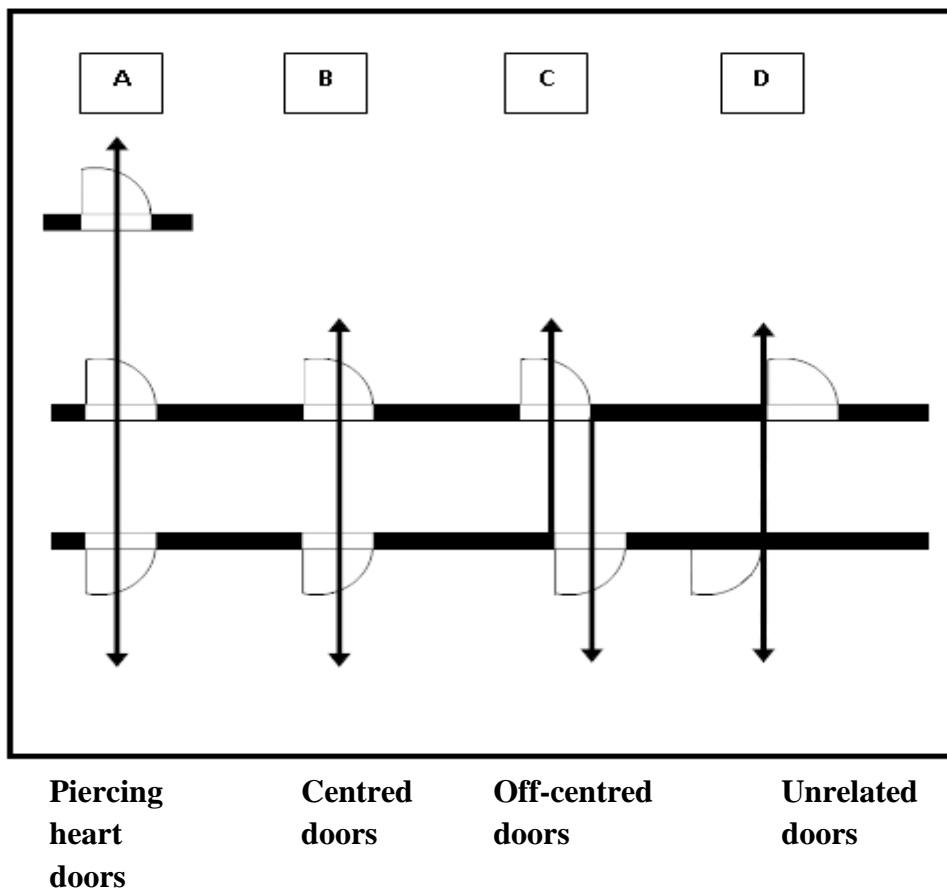
**Piercing heart doors.** “*Piercing heart*” doors are three or more doors centred in a row. As the energy (*ch'i*) goes through the succession of doors, the energy (*ch'i*) accelerates, in much the same way as when energy (*ch'i*) flows down a long hallway, but is squeezed as it goes through each door (Smith & Stewart, 2006).

**Centred doors.** Doors directly opposite each other may naturally pull energy (*ch'i*) of the opposite rooms into each other (Smith & Stewart, 2006). It may also cause rivalry and negative feelings - a plant at each door may alleviate the situation (Hale, 2000; Hale & Evans, 2007).

**Off-centred doors.** Doors which are off centred or misaligned opposite one another may result in the energy (*ch'i*) flowing through the first door to be partially interrupted, or blocked, by the next doorway. Even flow of energy (*ch'i*) is interrupted. It feels as if one half of a person is being pulled into the opposite room and the other half is being blocked by the opposite wall. This imbalance of energy (*ch'i*) can be corrected by placing a mirror on the portion of the wall directly opposite the open doorway (Smith & Stewart, 2006).

**Unrelated doors.** Using e.g directional artwork one can direct people subconsciously in a specific direction so that they do not have to “*think*” about which way to go (Smith & Stewart, 2006).

**Figure 4.14 Door relationships**



**Dead doors.** A “*dead door*” is one that is not used and should be covered as much as possible with a mirror. The image then becomes one of being in the space as opposed to being blocked. The metaphor is of being both physically and psychologically blocked and not allowed to progress in a natural way (Smith & Stewart, 2006).

**Doors: Perspectives and findings in the Environmental Social Sciences:**

The greatest degree of territorial control is afforded by doors and locks whilst the greatest opportunity for territorial infringement is afforded by cubicles and open-office designs (Kopec, 2006, p. 243). According to Brebner (1982) the placement of doors can facilitate or inhibit interaction between people. The distance between doors can also play an important role in the formation of friendships.

## Lighting

The lack of light is considered to have a negative effect on virtually every aspect of life (Smith & Stewart, 2006) and according to Lagatree (1997) bright lights enhance healthy flowing energy (*ch'i*). On a symbolic level, light symbolises illumination, knowledge and the divine (Wilkinson [Ed.], 2008). According to Hale (2000), Hale and Evans (2007) and Smith and Stewart (2006) natural daylight is the best. Hale (2000) and Hale and Evans (2007) are of the opinion that natural light should be filtered through vertical blinds, plants or movable screens to reduce glare. Glare creates *sha ch'i* (negative *ch'i*) and one needs to be careful of windows on the side of a desk (Lagatree, 1997). Lagatree (1997) suggests that a multi-faceted crystal at the window may be used to disperse the *sha ch'i* from the glare and creates good energy (*ch'i*) (Lagatree, 1997).

According to Hale (2000) and Hale and Evans (2007), fluorescent lighting could be depressing, causing lethargy, headaches, nausea, poor eyesight, stress and fatigue. Overhead fluorescent lights with a green/blue/grey hue (most often used in offices) may drain energy (*ch'i*) (Smith & Stewart, 2006). The quality of the light is important, and incandescent tungsten or halogen lights are the best (Hale, 2000; Hale & Evans, 2007). It is most effective to use light fixtures with traditional translucent shades in which the light shines both up and down, as well as through the shade. It allows more even distribution of light and the feeling of a better balanced space (Smith & Stewart, 2006). Smith and Stewart (2006) recommend having at least three light fixtures in a room and distributing these throughout the space, using wall washers and ceiling floods that cast a broader spectrum of light that overlaps with the light cast by adjacent fixtures to create a smooth flow of visual and psychological energy (*ch'i*).

### **Lighting: Perspectives and findings in the Environmental Social Sciences:**

According Thomas-Mobley et al. (2005) the occupant's satisfaction with a building's lighting is more important than suggested by current literature. Many authors indicate that fluorescent lighting is not the ideal (e.g. Voss, 1991, Morris & Dennison, 1995). Kopec (2006, p. 245) mentions that "*Lighting affects our well-being on many levels – visibility, activity, communication, mood and comfort, health and safety and aesthetic judgment – and interior lighting design, utilizing natural or artificial lighting, must respond to all these needs*". Natural light is the best and therefore any design should incorporate large unobstructed windows to bring in more natural light (Kopec, 2006, p. 244). Kopec (2006, p. 245) adds that "*although sunlight has greater beneficial effects than does artificial illumination, the general level of interior sunlight is less important than the size of the sunlit area*". Where there cannot be enough natural lighting, natural lighting can be enhanced by full-spectrum diffused ceiling lighting, or task lamps at each desk to illuminate the task at hand (Kopec, 2006, p. 244). Lidwell et al. (2003, p. 196) discusses the top-down lighting bias (also known as the top-lighting preference or lit-from-above assumption). A top-left light source will result in more natural looking objects or environments.

#### **4.2.8. Colour**

Colours affect humans both physiologically and psychologically and impact their psyche on the conscious, subconscious and unconscious levels (Smith & Stewart, 2006).

### **Colour: Perspectives and findings in the Environmental Social Sciences:**

This is supported by studies in the educational environment, for example:

- the use of colour in educational institutions influence attitudes, behaviour and learning comprehension by affecting attention span (Sinofsky & Knirck, 1981).
- colour can transform a dull drab environment into one that is pleasing, exciting and stimulating which results in the reduction of absenteeism and the promotion of greater school affiliation (Papadotas, 1973).
- teaching in blue and green rooms will yield greater comprehension and retention than in red environment (Mahnke & Mahnke, 1996; Osterberg, Davis & Danielson, 1995).
- painting hallways, doors and stairwells in a variety of colours, can enhance stimulation (Pile, 1997).

Brebner (1982) suggested that the meanings of colours have been derived from nature. In a study amongst college students Kaya and Epps (2004) concluded that the relationship between colour and emotion is closely related to colour preference and colour preference is closely related to whether a colour elicits a positive or negative feeling.

According to Smith and Stewart (2006) human beings first and foremost react on a biological level to the different wavelengths of the different colours and their values and intensities. In addition, the human being reacts to colours on the level of Jung's collective unconscious and, on a third level, on a cultural basis (based on anything from a longstanding tradition to fashion trends) (Smith & Stewart, 2006).

**Physiological effect of colour: Perspectives and findings in the Environmental Social Sciences:**

Kopec (2006) reports on the physiological effect of colour on human beings. Warm colours stimulate the optic nerve and when combined with bright lighting, increase blood pressure, heart and respiratory rates, muscle tension and brain activity (Wohlfarth, 1986). The reverse psychological response is true with the use of cool colours (Failey, Bursor, Musemeche, 1979; Hathaway, 1988). According to Lang (1996) people's colour perceptions and reactions are linked to cultural style with historic and symbolic references as well.

Mills, Tomkins and Schlangen (2007) concluded from their study on the brightness and wavelength of ambient light, that light can impact on the biological clock, mood and alertness by regulating the human circadian system.

The ideal colour arrangement in a space should simulate nature - the light value of the high sky (blue with white clouds – the ceiling), midrange values in the objects at eye level (buildings, forests, distant hills – the walls), and the dark value of the earth below our feet (the floor). Humans tend to feel more comfortable and balanced when the colour values used on floors, walls and ceilings reflect the natural daytime separation. The “*rule*” may be broken if doing so enhances the *primary purpose* of the particular space e.g. if a restaurant paints the ceiling a dark value to eliminate unsightly ceiling constructions (Smith & Stewart, 2006).

**Colour values: Perspectives and findings in the Environmental Social Sciences:**

Using lighting and brighter colours will enhance worker's perceptions of a workplace (Kopec, 2006, p. 244). Bright and light colours tend to advance and dim and dark colours tend to recede (Lang, 1996). Warmer colours with lighter tones should be used in communal areas for example gymnasiums, auditoriums and lunchrooms (Kopec, 2006).

As in everything in *feng shui*, colour balance is critical. According to Hale (2000), Hale and Evans (2007) and Smith and Stewart (2006), any colour should be balanced with its complement. This neutralises or balances the colour. The full colour spectrum of red, orange, yellow, green, blue, and purple represents the components of



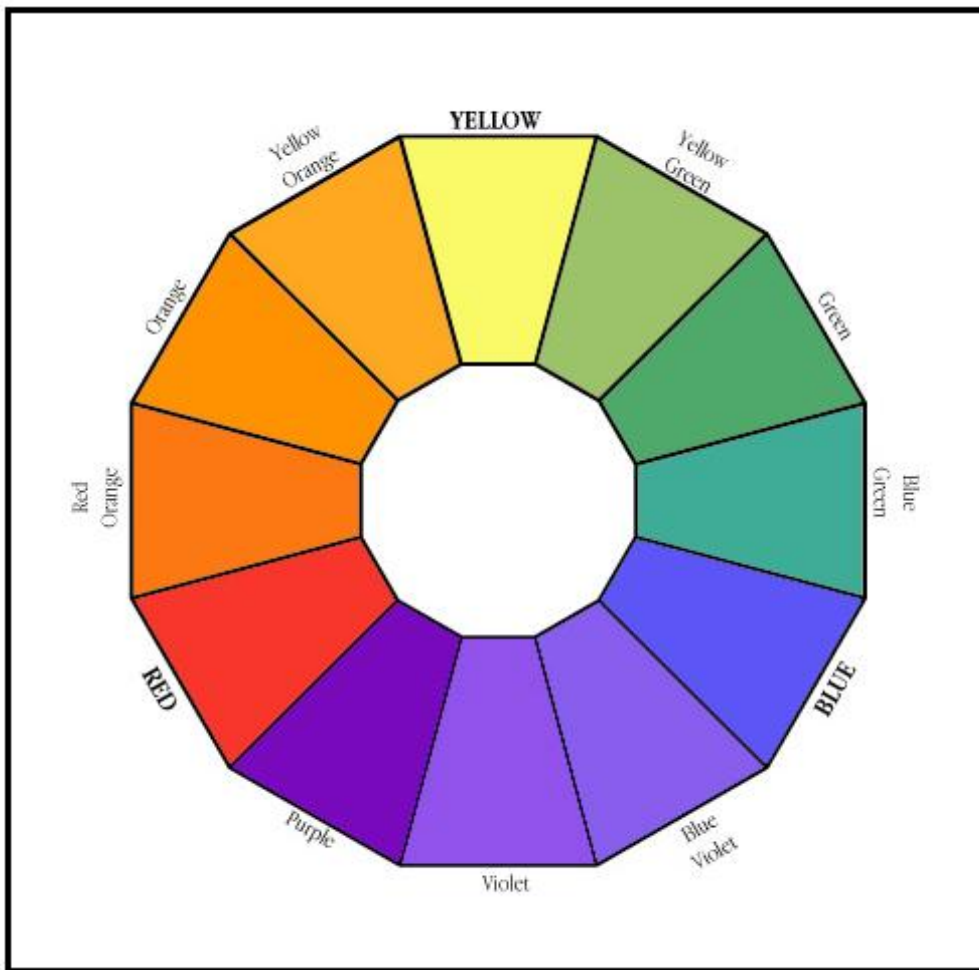
natural light and using all the colours of the spectrum in a space should make the environment feel more like nature, and therefore more complete and fulfilling.

*Yang* colours are from the red, orange, and yellow spectrum (representing warm and dynamic energy [*ch'i*]), and *yin* colours are from the green, blue, and purple spectrum (representing cool and less dynamic energy [*ch'i*]) (Hale, 2000; Hale & Evans, 2007; Smith and Stewart, 2006). According to the Munsell colour system, a colour can be described in terms of its hue (the specific colour), its tonal value or lightness, and intensity. Hue relates more to perceived warmth, saturation to elegance, and brightness to activity (Kopec, 2006, p. 138).

### **Hue**

Hue is the term used to define the specific colour, such as red, yellow, or blue. Each individual has the need for both the *yin* and the *yang* colours but in different proportions, with men more likely to be more drawn to the *yang* and women to the *yin* colours (Smith & Stewart, 2006).

**Figure 4.15 Colour wheel\***



\*Source: <http://www.suzannecooper.com/classroom/colorwheel.html>

According to Smith and Stewart (2006, p. 56):

- Warm colours come forward.
- Cool colours recede.
- Cool colours tend to lower energy (*ch'i*).
- Warm colours tend to stimulate energy (*ch'i*).

### **Tonal value (lightness)**

The tonal value of a colour is the lightness or darkness of the colour. Adding white to the colour creates a lighter value of the same hue and adding the complementary colour, black or grey, to the colour creates a darker, or lower, tonal value of the hue (Smith & Stewart, 2006).

According to the Munsell colour system, the saturation of a hue can be changed by adding black (shadow) or white (light). The amount of saturation gives the shades and tints (Ballast, 2002).

**Tint:** A tint is the pure colour (hue) with white added. This new colour has higher reflective value (is lighter) than the original hue.



**Shade:** A shade is the pure colour (hue) with black added. This new colour has a lower reflective value (is darker) than the original hue.



**Tone:** This is pure colour (hue) with grey added. This new colour is a softer variation of the original.



According to Smith and Stewart (2006, p. 57):

- Light colours recede.
- Dark colours come forward.
- Light colours are youthful and happy.
- Dark colours are mysterious, dignified and mature.

### **Intensity**

In creating environments that are conducive to lowering stress and maximizing the potential of the occupants, the effect of the intensity of the colour has, to be considered. The intensity of a colour is increased when it is seen with its complement and the more intense a hue, the more arousing the effect of that colour will have on the occupants of the space. Excitement or fatigue can be produced by the use of intense or strong chromatic values of primary and secondary hues and by patterns of strongly contrasting tonal values. Conversely, neutralizing tertiary (a mixture of two primary colours) and quaternary colours (a mixture of a tertiary colour and either the primary or secondary colour closest to that tertiary colour in the colour wheel) with mildly contrasting values would be more peaceful and restful on both the eyes and psyche of people (Smith & Stewart, 2006).

Hale (2000) and Hale and Evans (2007) are of the opinion that communal offices should have neutral colours while public areas should have neutral colours with accent colours reflecting the nature of the company. A warm white or pale cream with a slight hint of yellow is according to Smith and Stewart (2006) probably the best default colour. It is purported that cream is a subconscious reminder of the energy of the sun and should raise the energy level of the room's occupant (Smith & Stewart, 2006).

**Colour: Perspectives and findings in the Environmental Social Sciences:**

Colour and its emotional associations have been the subject of many studies, for example that of Birren (1997), Brebner (1982), Crozier (1999), Rider (2009) and Valdez and Mehrabian (1994). Rider (2009) in her thesis "*Colour Psychology and Graphic Design Applications*" mentions that the emotional reaction to colour is determined by hue, brightness and saturation but that there is often too much emphasis on hue. Brightness and saturation often have a greater effect on emotional reaction to colour than hue. The emotional reaction to colour can both be innate or learned within a cultural context (Rider, 2009).

Hale (2000) and Hale and Evans (2007) are of the opinion that it is the best that inhabitants choose their own wall and floor colours. Although Smith and Stewart (2006) agree, they have a more pragmatic view. The individual's needs can occasionally be accommodated in a business environment, but generally the focus is on the business's needs and the way the average person may react.

**Wall and ceiling colours**

The ideal situation would be for each employee to choose the colour of his or her own office or at least an accent colour. If one colour is selected for use in all the offices, then a change from the colour in the public areas may create a feeling of importance and enhance the productivity of employees (Smith & Stewart, 2006). The selection of an accent colour is the more practical solution from a cost-effective point of view (Smith & Stewart, 2006).

**Table 4.2 The psychological effects of colour and symbolic meanings**

	<b>Psychological effect*</b>	<b>Symbolic meaning**</b>
<b>Red</b>	Brings energy and life to an area that may need a boost	Life, warmth but also aggression
	Relates to speech	
	Stimulates the appetite	
	Is the colour of power and strength	
<b>Orange</b>	Is a difficult colour for most spaces, except as an accent	Luxury and splendour, but also the renunciation of worldly pleasure
	May cause aggression or agitation May make children cry more	Share symbolism with red and yellow – represents the point of balance between the passion of red and the spirituality of yellow
<b>Yellow</b>	Represents the energy of the sun	Sun and its life-giving powers
	Is the colour of joy, happiness, tolerance, acceptance and honesty	
<b>Gold</b>	Provides a sense of being grounded	Illumination, wisdom and wealth*
	Improves communication	Evokes the feeling of prestige
	Is associated with prosperity	Often symbolises high quality
<b>Green</b>	Enhances new beginnings, growth and abundance	Awakenings, new beginnings, growth, spring, youth, hope, joy and nature
	Is reminiscent of foliage	
	Calms emotions and promotes rest	
	The colour of hope and vitality	
<b>Blue</b>	Stimulates career, productivity and success	Wide open spaces, infinity, calmness, reflection and intellect
	Is calming, soothing and tranquil	
	Lengthens time Historically a royal colour	
<b>Purple</b>	Is associated with wealth and royalty	Luxury, wealth, power, royalty and priesthood
<b>Brown</b>	Creates a feeling of being grounded and stable	<b>Brown</b> suggests stability and denotes masculine qualities. <b>Reddish-brown</b> is associated with harvest and fall***
	Is less intimidating than blue	
<b>White</b>	Represents purity and death	Purity, innocence, knowledge and light
<b>Black</b>	Knowledge, seriousness, and justice	Power and authority
<b>Grey</b>	Diminishes energy	Gloom, anonymity, uncertainty.
	Should be avoided in almost all cases	Mediation as the balance between black and white

\* Smith & Stewart (2006, p. 67)

\*\* O'Connell & Airey, 2007; Wilkinson [Ed.], 2008

\*\*\* <http://www.color-wheel-pro.com/color-meaning.html>

#### 4.2.9. Private offices

According to Smith and Stewart (2006, p. 191) the ‘*psychology of “hierarchy”*’ plays a role in the allocation and design of office space of executives. For example status is associated with higher floors. Executives should be accommodated on the top floors. Design elements such as more luxurious carpets also indicate higher status (Smith and Stewart, 2006, p. 204).

#### **Status markers: Perspectives and findings in the Environmental Social Sciences:**

Unlike *feng shui* where status markers are regarded as important, there is a movement away towards democratization by some. For example, according to Brill et al. (2002, p. 7), the “(w)orkplace is a tool, not a status-driven entitlement”. Others, like Zalesny and Farace (1987) disagree. The physical setting of work communicates information symbolically and represents the social order and the individual’s place in it - it is potentially an important symbol of organizational status and can help to regulate interpersonal behaviour across levels (Zalesny & Farace, 1987).

#### **Flooring**

A change in the colour of the carpet or other flooring dissimilar to that of the corridor creates the sensation that one is entering a different world. A carpet seems to be more comfortable and is quieter than a wood or tile floor. An earth tone is thought to make the occupant feel more grounded and stable (Smith & Stewart, 2006).

#### **Flooring: Perspectives and findings in the Environmental Social Sciences:**

Flooring can be a source of pollutants (and a contributing factor to sick building syndrome) and, depending on the material, a sound damper (Kopec, 2006). Flooring can be used to delineate areas. The Gestalt design principle of similarity for example applies – elements which are similar, are perceived to be related (Lidwell et al., 2010, p. 226).

#### **Windows**

Symbolically windows are the eye of the soul (Wilkinson [Ed.], 2008). It is contended that the first thing that is seen when a space is entered, is where one may be taken subconsciously. The *feng shui* principle is that a person’s energy and thoughts

will then be contained within the room and will not immediately move out of the window to a place they would rather be (Smith & Stewart, 2006). Window blinds that can pull down are therefore recommended. People should also lower and close the blinds or pull the curtains shut when leaving for the day (Smith & Stewart, 2006).

#### **Windows: Perspectives and findings in the Environmental Social Sciences:**

Much has been written in Environmental Social Science about the effect of windows. Research indicates that people prefer rooms with windows (Farley & Veitch, 2001; Kopec, 2006, p. 139). Those without windows tend to view their jobs less favourably, feel tenser and more restricted (Nagy, 1995): “*window views of nature positively affect the health and well-being of building occupants, and views have a restorative value in relation to stress at work*” (Kopec, 2006, p. 244, also supported by Farley & Veitch, 2001). Views of nature are not only fundamental to well-being and satisfaction, but also provide opportunities for both prospect refuge and restorative experiences (Kaplan & Dana, 2001).

With specific reference to open-plan cubicles, Veitch et al (2004), mentions that a window in a cubicle has a positive effect on satisfaction with lighting. It connects the person to the outside world and contributes to the ability to cope with stressful situations. According to Farley and Veitch (2001) natural views restore effectiveness by experiencing a view that requires no effort, and engenders a sense of being away (Attention Restoration Theory – ART).

A window that can open or close increases the perception of control over temperature, ventilation and lighting and self-rated productivity (Farley & Veitch, 2001).

#### **Clutter in office**

“*In the East there is a saying that a sacred space is complete only when there is nothing more that can be taken away from it*” (O’Connell & Airey, 2007, p. 91). Desks should be well-organised and uncluttered (Hale, 2000, Hale & Evans, 2007; Smith & Stewart, 2006). For example stacks of files may block the free flow of energy (*ch’i*), which is essential to concentrate and be creative (Lagatree, 1997). Clearing out clutter provides an opportunity to let go of the past that can prevent one from moving on. Clutter subconsciously but constantly reminds a person of

uncompleted tasks, thus disabling one to devote all the required energy and attention to the task that needs to be performed (Smith & Stewart, 2006).

### **Clutter: Perspectives and findings in the Environmental Social Sciences:**

In Environmental Social Science there is not a clear-cut distinction between clutter and personalization. According to Kopec (2006, p. 242) '*some employers believe that office "clutter" is a mark of inefficiency and chaos and therefore their company policies prohibit employees from personalizing their workstations, whereas others allow or even encourage personalization as an expression of individuality and a symbol of the individual's contribution to the corporation*'. Feng shui encourages personalization in terms of for example placing photos of family in the relationship corner of the *Bagua*.

According to Brebner (1982) our environment should not be too cluttered or complex, but it should have some complexity to make it interesting (Brebner, 1982, p. 173). Brebner (1982, p. 171) defines clutter as different objects, different colours, different forms competing against each other to be figure or background. Keeping things simple is a universal design principle; the 80/20 rule where the noncritical less important 80 percent should not be emphasized or should even be removed (Lidwell et al., 2003, p. 12). The principle of simplicity is also applicable to design. Ockham's razor is also a design principle purporting simplicity in design – unnecessary design elements increase the potential of failure and lowers aesthetic appeal (Lidwell et al., 2003).

Employees working in open-plan office (cubicles) establish their spaces through décor, signs, colours and artworks serving as territorial markers. It provides a sense of identity, control and purpose (Becker & Steele, 1995). Kopec (2006, p. 243) makes a strong statement about this: '*if employees can't make their environment their own, they are less likely to "bond" with the company and more likely to seek employment elsewhere*'. Incorporating detail can make the employee feel special which, according to Kopec (2006, p. 243) relates to higher morale and job-satisfaction. Even something simple as variation in table and desk shapes can increase satisfaction.



**Clutter: Perspectives and findings in the Environmental Social Sciences:**

Workplace personalisation is important for satisfaction. Wells (2000) is of the opinion that personalisation positively affects the individual's environmental satisfaction, well-being and overall job satisfaction, as well as corporate culture. It signifies individuality and identity, marks territories and regulates social interactions, leads to a positive workplace culture, higher employee morale and less employee turnover (Wells, 2000b).

**4.2.10. Communal areas**

**Communal staff areas**

Communal staff areas are places to relax and therefore Smith and Stewart (2006) proposes:

- The calmness of cool colours, especially greens. “(G)ray is apt to depress one’s energy and blue tends to kill the appetite” (Smith & Stewart, 2006, p. 209).
- Comfortable and substantial furniture.
- Cheap-looking pieces, poor lighting, and poor quality artwork may communicate a message to the employees about how important, or not, management considers them.
- Round tables should enhance a feeling of collegiality<sup>10</sup>.

**Communal staff areas: Perspectives and findings in the Environmental Social Sciences:**

The importance of having areas where staff can relax cannot be denied. Brill et al. (2002) report that “*Workplace has good places for breaks*” ranked seventh on workplace qualities with the strongest effects on productivity and job satisfaction. This is based on their research conducted from 1994-2000 amongst 13 000 people in 40 business units.

The inclusion of/access to semi-public spaces increases development of socializing behaviour (Halpern, 1995).

<sup>10</sup> Or in the African idiom: an Ubuntu feeling.

## Meeting rooms

According to Smith and Stewart (2006, p. 190) conference rooms are often best placed in an interior space for the following reasons:

- When people enter a conference room with outside windows, their attention is drawn outside.
- The *primary purpose* of a conference room is generally to hold productive business meetings, not to admire the view.
- Outside movement draws the attention of the people facing a window.
- Rooms may often become uncomfortable when the sun shines through large windows.
- Windows with coatings often turns into mirrors, reflecting chaotic patterns and overlapping and distracting images.
- Placing conference rooms in the interior allows window space and natural light for open office staff areas.

According to Hale (2000) and Hale and Evans (2007) oval tables are regarded as the best choice for a conference room. As mentioned in paragraph 4.1.6, round tables do not encourage anyone to sit down for too long and they are ideal for meetings which should be kept short (Hale, 2000; Hale & Evans, 2007). Round tables are suitable for brainstorming and rectangular tables for meetings with a leader or chairperson. A round table symbolises equality as there is no “*head of the table*” (Wilkinson [Ed.], 2008, p. 238). According to Smith and Stewart (2006) square and rectangular tables create a confrontational atmosphere. The chairperson should be in the *commanding position* or strongest position and should have a larger chair (Hale, 2000; Hale & Evans, 2007; Smith & Stewart, 2006).

The most powerful position at a boardroom table is facing the door with one’s back to a wall: the wall behind one’s back should provide support and assists in asserting authority (Lagatree, 1997).

### **Table shape/seating arrangement: Perspectives and findings in the Environmental Social Sciences:**

According to Kopec (2006) horseshoe or circular seating arrangements increase visibility, attentiveness and participation. According to Canter (1974) the shape of a table and the seating positions may have a major influence on interactions. He gives the example of the Vietnam War Peace talks which were deadlocked for a while over whether the table where the talks were held should be round or square. Canter (1974) also reports on a study conducted by Sommer in 1961 that at a square table the most preferred seat is either side of a corner. People in competition face each other across the long sides of the table. People cooperating sit side by side and people co-acting (not requiring any interaction) will sit in opposite corners facing each other.

#### **4.2.11. Shape**

A regular shape (rectangle, square, or round) has the most comforting impact on an individual and is used in many cultures. According to *feng shui* practitioners the most ideal type of space is a "regular" square or rectangle, which provides energy (*ch'i*) balance, equilibrium and harmony (<http://www.fengshuibestbuy.com/missingcorners.html>). A missing corner is created when a proportion or area is missing in the rectangle and a projection is created if there is an extension to the rectangle (Smith & Stewart, 2006).

By using the shape and ratio<sup>11</sup> of the Golden Rectangle in buildings and spaces within a building, nature is approximated and spaces are created in which humans should feel more comfortable (Smith & Stewart, 2006). Leonardo da Vinci used the Fibonacci sequence<sup>12</sup> in his work to create the concept of the Golden Rectangle (simplified as the Rule of Thirds) (Smith & Stewart, 2006).

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<sup>11</sup> Leonardo da Vinci's Golden Ratio is 1 to 1.618 (Smith & Stewart, 2006).

<sup>12</sup> The Fibonacci sequence is a sequence of numbers starting with 0 and 1 where each number is the sum of the two numbers immediately preceding them. The geometric ratio of any two successive numbers of the sequence, such as 8 to 13 or 13 to 21, is frequently found in nature, e.g. in the curve of the nautilus shell.

Smith and Stewart (2006) argue that a deviation from the Golden Rectangle would make people feel less comfortable - a longer and thinner room may create a feeling of being squeezed in. If the space moves towards a square shape, it may begin to feel static (Smith & Stewart, 2006).

**Room shape: Perspectives and findings in the Environmental Social Sciences:**

Applying the Golden Ratio will result in a rectangular room. It is a standard consideration in design and one of the universal design principles (see also the Rule of Thirds and the Fibonacci sequence). Nasar (1981) reports, from an Environmental Social Science perspective, that more square rooms compared to rectangular rooms are preferred.

The Golden Ratio is found throughout nature, in art and in architecture and in the human body (Lidwell et al., 2003), appearing in pinecones, sea shells, the paintings of Leonardo da Vinci, the violins of Stradivari, the Parthenon, Stonehenge and Great Pyramid of Giza. Early artists and architects subconsciously incorporated the ratio in their designs (Lidwell et al., 2003). Lidwell et al. (2003, p. 96) poses the question whether it “*taps into some inherent aesthetic preference or is simply an early design technique turned tradition*”.

#### 4.2.12. Sound

*Feng shui* practitioners regard wind chimes and water as important means to introduce sound into an environment. Wind chimes are both welcoming and may add energy (*ch'i*) to a recessed doorway. *Yang* energy (*ch'i*) can be brought to a space by water (Smith & Stewart, 2006).

**Figure 4.16 Office water feature\***



\* <http://www.serenityhealth.com/wtrfount.html>

#### **Sound: Perspectives and findings in the Environmental Social Sciences:**

More attention is given in Environmental Social Science to noise than sound. Studies indicating the negative effect of noise exposure include: a study by Evans and Johnson (2000) indicating that workers in noisy offices had increased levels of the stress hormone epinephrine, although few people reported feeling stressed. This can implicate that one gets used to noise and ignores the detrimental effects (Evans & Johnson, 2000). The three sources of noise are: reverberation (sound that occurs when sound waves rebound from hard, flat surfaces), internal noise (e.g. voices) and external noise (e.g. traffic). Reverberation is a product of room configuration (parallel walls), surface finishes (hard or soft), material density (solid or hollow) and air tightness (sound transfer) (Lang, 1996).

### **Sound: Perspectives and findings in the Environmental Social Sciences:**

Noise can be reduced or enhanced by changing the room size, internal surface dimensions (walls, ceilings, floors and windows) and surface materials (chairs, desks, flooring, wall covering and ceiling treatments – see also paragraph 4.1.6) (Kopec, 2006, p. 192). Internal noise is difficult to eliminate (sounds from computers, light etc.). External noise can be controlled by for example sound damping walls and tall trees. Chigot (2003) analysed and reported on the effect on noise when using glass in indoor design. Glass is a sound reflector and contributes to reverberation and sound propagation from one side of the room to the other. To prevent these negative effects absorbing materials need to be included in design.

Chigot (2003, p. 129) provide the following guidelines for a robust sound environment

#### **The allocation and use of space:**

- Place people who need to communicate close to each other.
- Separate activities that generate sound from activities that are sound sensitive.

#### **Handling of the sound environment:**

- Use sound absorbing materials and silent HVAC installations (Heating, Ventilation and Air conditioning). For example, linoleum or carpeting can be used to minimize noise (Kopec, 2006, p. 196).
- Supplement open-plan offices with sound-insulated rooms that can be used temporarily for tasks requiring a quiet environment.

Involve an acoustic expert.

#### **Educate and inform user:**

- Give employees advice on how to behave in the office.
  - Help the employees to know what to expect from acoustic conditions in the office.
- The number of people sharing an environment will have an influence on noise. Halpern (1995 from studies by for example Frank, 1983; Lefebvre, 1984) reports that the larger the number of dwellings, the lower the number of neighbours that are known and the lower the level of attachment to the community. By dividing employees into smaller units more positive neighbouring can be expected (Halpern, 1995, p. 121).

#### 4.2.13. Artwork and mirrors

Art can be used to (Smith & Stewart, 2006):

- Direct energy (*ch'i*) and people in a certain direction.
- Represent the five elements e.g., a horizontal element that conveys the image of Earth will tend to create a greater sense of calmness and stability, whereas a vertical picture will convey more of a sense of the power and upward movement of the Wood element.
- Provide the feeling of depth to counter a blocking wall.
- Provide a meandering feeling in a corridor.
- Shift energy (*ch'i*) and reduce stress levels by having for example a humorous piece.

Mirrors may be used to (Smith & Stewart, 2006):

- Open up spaces especially in restricted spaces such as a tight entrance and a narrow hallway.
- Visually fill in a missing area.
- Bring the room outside a door wall (the wall where the main door is situated) inside the house or office through reflection (see also “*projection*” in paragraph 4.1.11).

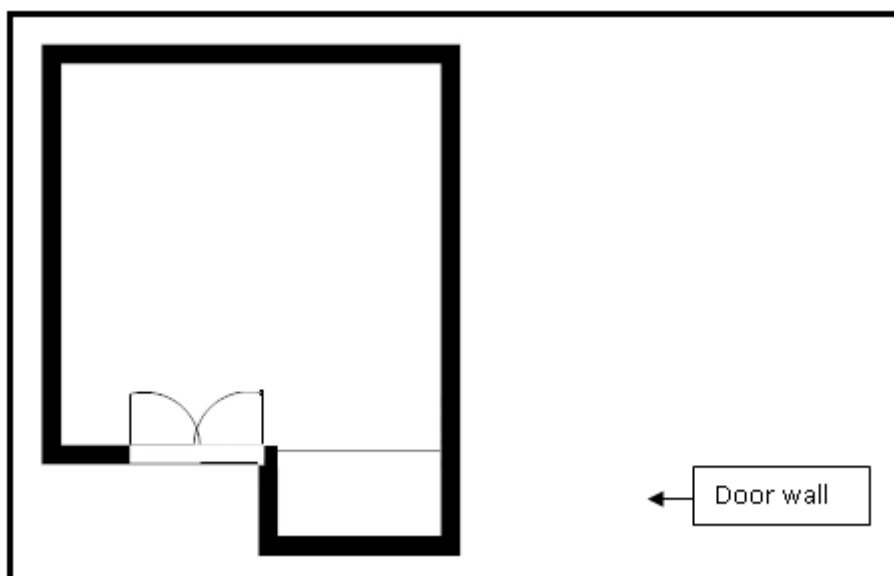
### **Artwork: Perspectives and findings in the Environmental Social Sciences:**

Artwork serves people in the following main ways (Berlyne, 1971 as cited in Brebner, 1982) quotes that:

- It provides pleasure.
- Influences the assessment of our environment and among other things determines whether we value the environment.
- Through artwork we can provide signs or symbols of our environment as well as reshape, transform or translate the environment.
- Exercising our information processing capacities.
- Express and define our personality or sense of identity.

McCoy (2002) mentions that architectonic details (including artwork) provide a non-verbal communication system in which messages are conveyed – for example about status, identity of users, the history of the organisation or a subgroup like a team. It can be used to reflect the values and norms of an organization and its employees, for personal expression, expressing individual and group identity, marking territory, making the environment more stimulating, symbolising commitment to a place and communicating the purpose of a place.

**Figure 4.17 Door wall**



He also mentions that the physical isolation of dwellings e.g., if a dwelling in a U-design faces outwards and not inwards, the number of passive contacts and



friendships will be significantly lower (Halpern, 1995, p. 124). This can apply to the location of both buildings and offices.

**Physical isolation e.g. door wall: Perspectives and findings in the Environmental Social Sciences:**

As mentioned earlier in paragraph 4.2.1, physical isolation such as a dwelling in a U-design facing outwards and not inwards, reduces passive contacts and the chance of developing relationships will be lower (Halpern, 1995).

**4.2.14. Plants and wall**

Although each type of plant and flower has its own individual meaning, they also have universal symbolic meanings. Plants symbolise balance and cosmological order and flowers represents a growth cycle and a crowning achievement (O'Connell & Airey, 2007). Plants may be used to (Smith & Stewart, 2006):

- purify an interior space of some toxins (resulting from chemicals emitted from e.g., equipment and synthetic materials),
- change or stimulate the flow of *ch'i* (energy) in the environment by moving plants around in a space,
- increase the energy (*ch'i*) of a property and make it feel even more vibrant by having trees, shrubs and flowers that attract birds and other wildlife,
- create colour balance in a space and incorporate the five elements,
- convey an image of health by placing a plant in the appropriate *gua* (see *Bagua*),
- fill a corner that feels empty to make it feel more comfortable,
- create energy (*ch'i*) that is consistent with the *primary purpose*.

As a green, lively plant is a metaphor for life and health, dead leaves and plants can have the opposite effect. Dead leaves should be pruned immediately and dead plants and flowers instantly removed (Smith & Stewart, 2006).

Water may be used (Smith & Stewart, 2006):

- To add a sense of vital energy (*ch'i*) to a property or space.
- As a metaphor for success and prosperity.
- To enhance people's lives through the use of the *Bagua* or to create a better balance of the five elements of a space.
- To calm and provide a sense of peace and connectedness. Efforts should be made to place the primary entrance facing the water.
- To create a dynamic business image. For example a fountain (in proportion to the building) that sends water upwards in a powerful but controlled way, creates a sense of energy (*ch'i*).

#### **Plants: Perspectives and findings in the Environmental Social Sciences:**

The positive effect of plants is well documented and researched. For example potted plants at the front and back of classrooms, can serve as attention restorative features (Kopec, 2006, p. 197). People actually avoid outdoor spaces that are devoid of grass and trees (Kuo, Sullivan, Levine Coley & Brunson 1998). According to Kopec (2006, p. 244), the use of indoor atriums in the workplace can be considered to increase workers' positive perception of spaces. Kopec (2006, p. 305) quotes Fenton (1985) that natural features, green areas, open spaces with pathways and water features are universally liked. Kopec (2006, p. 305) continues that if "*designers add suitable seating areas and shady trees, they have a template for designing plazas and urban parks*".

Plants increase humidity, absorb heat and sound and filter dust (Beeld, Monday, 10 August 2009). Keeping relative humidity in the 25 percent to 60 percent range tends to minimize most health issues – although opinions vary greatly (Lstiburek, 2002).

## 4.2. SICK BUILDING SYNDROME

**NOTE: Both the sick building syndrome and ergonomic discussions are based on Environmental Social Sciences only.**

According to a number of authors (for example Conlin & Carey, 2000; Lees-Haley, 1993; Matthes, 1992; Moretz, 1988; Morris & Dennison, 1995;) the energy crisis in the 70's resulted in design changes to save energy which actually contributed to sick building syndrome such as:

- constructing buildings with fewer operable windows reduce fresh air,
- lowering thermostats in winter and raising them in summer,
- eliminating humidification or dehumidification systems.

Sick building syndrome can be defined as a building “*in which 20 percent or more building occupants experience similar acute health effects that appear to be linked to time spent in a building, but no specific illness or cause can be identified*” (Thomas-Thomas-Mobley et al., 2005, p. 7). According to James Woods (a senior engineering manager at Honeywell Building Controls Division) (as quoted in Moretz, 1988) the common characteristics of sick buildings are: More than 20 percent of inhabitant workers show symptoms.

- 2) Symptoms disappear when inhabitant workers go home and reappear when they return.
- 3) It is difficult to find one single source of the problem.
- 4) The problem is nearly always mitigated by dealing with the physical systems of the building.

According to the United States National Institute for Safety and Health (NIOSH) the symptoms are caused by a multitude of factors. See Table 4.3 below:

**Table 4.3 Sick building syndrome causes<sup>13</sup>**

Cause	%
Inadequate ventilation	52%
Contamination from inside the building (e.g. photo-copying machines, pesticides, boiler additives, cleansers, tobacco smoke, gases from cafeterias and laboratories)	17%
Contamination from outside (e.g., motor vehicle exhaust fumes drawn into a building's ventilation system, asphalt, solvents and dust)	11%
Microbiological contaminations	5%
Contamination from the building (e.g. building material)	3%
Unknown	12%

Sick building syndrome is not caused by a single factor or group of factors, but rather by an interaction between building, environmental and individual psychological factors (Thomas-Mobley et al., 2005). The result of the complex interaction and complexity is a multifaceted solution (Thomas-Mobley et al., 2005). Thus, according to McDonald (2002), the elastic definition and broad range of symptoms can cause an attempt to attribute various health problems to the so-called sick building syndrome. In the following table, environmental aspects that need to be addressed and solutions or guidelines for acceptable conditions are provided. The summary is based on Matthes (1992), Moretz (1988), Morris and Dennison (1995), Rooley (1988) Rooley (1997) and Thomas-Mobley et al. (2005), Rooley (1997) is of the opinion that to have a happy, productive and well-motivated workforce a combination of design issues, ergonomics and sick building syndrome preventative measures need to be addressed.

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<sup>13</sup> [http://www.osha.gov/dts/osta/otm/otm\\_iii/otm\\_iii\\_2.html](http://www.osha.gov/dts/osta/otm/otm_iii/otm_iii_2.html)

**Table 4.4 Sick building syndrome: Summary**

Aspects to analyse	Addressing aspects
<p><b>1. Air quality</b></p>	
<ul style="list-style-type: none"> <li>• Indoor air quality, adequate supply of outside air, adequate ventilation and fresh air, air-conditioning, micro-organisms breeding in humidifiers.</li> </ul>	<ul style="list-style-type: none"> <li>• The correct amount of outside air.</li> <li>• Adequate supply of outside air (increased outside air flow does not necessarily mean improved indoor air quality (Lees-Haley &amp; Brown, 1993).</li> <li>• Good indoor air quality.</li> <li>• Adequate ventilation and ventilation of fresh air.</li> <li>• Correct air distribution and mixing</li> <li>• Installation of electrostatic air cleaners (Skulberg, Skyberg, Kruse, Eduard, Levy, Kongerud &amp; Djupesland, 2005).</li> <li>• Moving machines that use hazardous materials to less populated areas.</li> <li>• Using paints, adhesives, solvents and pesticides only when few people are present.</li> </ul>
<ul style="list-style-type: none"> <li>• Mechanical heating, ventilation, air-conditioning systems, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Proper maintenance of ventilation system.</li> </ul>
<ul style="list-style-type: none"> <li>• The application of energy conservation measures resulting in hermetically-sealed airtight shells with mechanical heating, ventilation, air-conditioning systems, etc.</li> </ul>	
<ul style="list-style-type: none"> <li>• Chemicals, pollutants and micro-organisms breed in humidifiers.</li> </ul>	

**Table 4.4 Sick building syndrome: Summary (continued)**

Aspects to analyse	Addressing aspects
<b>2. Toxins and pollutants</b>	
<ul style="list-style-type: none"> <li>• Hermetically-sealed airtight buildings causing pollutants to be trapped in a building.</li> </ul>	<ul style="list-style-type: none"> <li>• Presence of gaseous pollutants e.g. outdoor pollutants, formaldehyde as a resin used in particle board, fibreboard and plywood.</li> </ul>
<ul style="list-style-type: none"> <li>• Chemicals, out-door pollutants, materials and equipment that give off a variety of irritating and sometimes toxic fumes or dust.</li> </ul>	<ul style="list-style-type: none"> <li>• Pollutants (e.g. gases, paper dust, body odours) should be controlled by a ventilation system as set out by standards.</li> </ul>
<ul style="list-style-type: none"> <li>• Indoor air pollutants are caused by:               <ul style="list-style-type: none"> <li>○ Presence of indoor air pollutants.</li> <li>○ Poorly designed, maintained or operated ventilation systems. Improperly location of outside air intake vents can cause air contaminated by emission gases, fumes from dumpsters or rest rooms entering the building.</li> <li>○ The use of buildings in other ways than originally planned e.g., a building designed as a workshop now being used as offices.</li> </ul> </li> </ul>	
<b>3. Noise levels</b>	<ul style="list-style-type: none"> <li>• Background noise level that is appropriate to the task – not too high or too low.</li> </ul>

**Table 4.4 Sick building syndrome: Summary (continued)**

Aspects to analyse	Addressing aspects
<b>4. Lighting</b>	
<ul style="list-style-type: none"> <li>• White fluorescent light likely to cause eyestrain, headaches.</li> <li>• Fluorescent lighting produces a photochemical smog.</li> <li>• Artificial lighting.</li> <li>• Inadequate illumination glare, flicker and lack of contrast can cause tiredness, dry and gritty eyes and headaches.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce light levels.</li> <li>• Use task lighting.</li> <li>• Group employees with similar lighting needs together.</li> </ul>
<b>5. Thermal comfort</b>	
<ul style="list-style-type: none"> <li>• Thermal comfort - too warm is “stuffy”, cool is “fresh”.</li> </ul>	<ul style="list-style-type: none"> <li>• A temperature of 20–24 °C.</li> <li>• Mean radiant temperature of surfaces of the space should approximate air temperature.</li> <li>• Humidity level of between 40–70 percent.</li> <li>• Mean air velocity of less than 0.15 meter per second.</li> </ul>
<b>6. Other factors</b>	
<ul style="list-style-type: none"> <li>• Static electricity</li> <li>• Ions</li> <li>• Electromagnetic fields</li> </ul>	<ul style="list-style-type: none"> <li>• Place house plants around office and work areas.</li> <li>• Install water purifiers.</li> </ul>
<b>7. Psychological factors (mediating or aggravating factors)</b>	
<ul style="list-style-type: none"> <li>• Feeling under psychological pressure as a result of lack of individual control over environmental conditions.</li> </ul>	<ul style="list-style-type: none"> <li>• Visually satisfying workstation.</li> <li>• Comfortable, effective computer and other equipment use.</li> </ul>
	<ul style="list-style-type: none"> <li>• Stress – factors such as low floor-to-ceiling height, large unstructured open plan areas, an absence of natural light or poor lighting and ill-chosen colour schemes can all contribute to stressful environment (quotes Curwell, March &amp; Venables, 1990).</li> <li>• Continuous communication and speed of communication when there is a problem (Odom &amp; Bar, 1996).</li> </ul>

### 4.3. ERGONOMICS

**NOTE: Both the sick building syndrome and ergonomic discussions are based on Environmental Social Sciences only.**

The definition of office ergonomics covers the following aspects (Beiswinger, 1994, p. 50; Bettendorf 1990 p. 36; Borsari, 1998, p. 106):

1. The science of adjusting the workplace to the worker (not the worker to the job).
2. The interaction of the individual with the total work environment.
3. The interactive relationship can affect an individual's health and well-being.
4. The training of the worker to use workplace tools while applying ergonomic principles can result in improved efficiency, comfort, improved productivity, and morale benefits.
5. The above can result in adding economic value to the company.

Typical aspects addressed in ergonomics are for example furniture, interior air quality, lighting, sound, design of workstations, monitors, computers, keyboards, peripherals, office ambiance and all relievable stress factors (both mental and physical) associated with work (Beiswinger, 1994).

According to Baron et al. (2006) the basics to be addressed in ergonomics are posture, tasks, lighting, temperature, furniture and equipment. Stability, clearance and support are three critical factors in ergonomics (Bossen, 2005). Stability refers to the state or quality of being stable, or resistant to change or deterioration, clearance to seat (seat depth and work surface height and support to active (e.g. sitting upright) and passive support (e.g. having a backrest) ([http://ehstoday.com/health/ergonomics/ehs\\_imp\\_37506/](http://ehstoday.com/health/ergonomics/ehs_imp_37506/)).

Good ergonomics and good performance go hand in hand (Borsari, 1998, p. 106). In the words of Fritscher-Parker (2003, p. 22) “*(t)here is an especially great irony in not having an ergonomically sound office in an economy where you need to get more work done without hiring more help*”.



One of the fundamental ergonomics principles is customization and control. People of different heights, sizes etc. would have different needs. As Leyes (2001) rightly states: ergonomics for a 6 foot, 190 lb man is different from that required by a 5 foot, 110 lb woman. Added to this, people move, change posture and shift weight during the day (Bossen, 2005). Customization and providing controls address the variability in needs and function (Veitch et al, 2004).

However, Veitch et al (2004) warn that providing controls does not remove the need for suitable and comfortable conditions. According to Leyes (2001) to enable employees to adapt their workspace to their own needs the workstation should have as many as possible adjustable features that are accessible, easy to use, well-maintained and responsive (Leama & Bordass, 2001 as cited in Veitch et al, 2004). Examples of controls are adjustable chairs, keyboard trays, lighting, ventilation control and employee participation in office design (Veitch et al, 2004). Weinstock (1994) gives the following checklist for ergonomics:

- Furniture checklist e.g. is furniture adjustable;
- People-centred checklist e.g., check workstations – are feet touching the floor, do workers wear bi-focals,
- Risk factor checklist: study all potential risks in a workstation e.g. repetition of motion, awkward postures, sustained exertion,
- Problem-centred analysis: start with discomfort and work backwards to causes.

Matthes (1992) adds exercise programmes, rest breaks and job rotation as aspects that need to be addressed in ergonomics.

Verespej (1994) gives an example of customization at US Communications Inc. in Denver that offered employees six types of adjustable chairs, armrests, footrests, adjustable computer workstations with optimal non-glare screens and different types of lighting. Employees also had a choice in design aspects by being able to choose greenery, wall colour and painting for their offices.

A company should get to a point where ergonomics is institutionalised as part of the corporate culture (Weinstock, 1994). To ensure this, upper management needs to buy into the process (Kuhar, 1995) and the process has to be:

- Seamless to the employee,
- Easy to understand,
- Non-technical in nature,
- Focused on behaviour education.

#### **4.4. SUMMARY**

In Table 4.5 the summary of the literature review of both *feng shui* and Environmental Social Science design principles and elements discussed in this chapter are presented. Applicable symbolism is also included and this table will be expanded to include results from this study as well.

**Table 4.5 Summative comparison of design elements**

<b>Design principle/element</b>	<i>Feng shui</i>	<b>Symbolism</b>	<b>Environmental Social Science</b>	<b>Comment</b>
<b>Location</b>	<p>The psychological impression that the neighbourhood will have on residents, employees, clients, and customers, the energy (<i>ch'i</i>) of the area needs to be analysed. One needs to ascertain whether the neighbourhood is very <i>yin</i>, very <i>yang</i>, or is it in balance? The level of energy (<i>ch'i</i>) which is needed is determined by the <i>Primary Purpose</i> of the building.</p> <ul style="list-style-type: none"> <li>○ One would preferably have a taller building at the <b>back</b> (the <i>Tortoise</i> in <i>feng shui</i>).</li> <li>○ with supportive buildings on both sides: <ul style="list-style-type: none"> <li>○ with the building on the <b>right</b> taller (the <i>Dragon</i> in <i>feng shui</i>).</li> <li>○ than on the <b>left</b> when facing the building (the <i>Tiger</i> in <i>feng shui</i>. If this is not the case, trees, walls and fences take over the role.</li> </ul> </li> <li>○ The <b>front</b> of the building should be marked by a front boundary e.g. a wall, a fence or a sign with the company's name (the <i>Phoenix</i> in <i>feng shui</i>).</li> </ul>	<p>According to Brown (2005), Hale (2000) and Hale and Evans (2007) and others:</p> <ul style="list-style-type: none"> <li>○ <b>Back:</b> The <i>Tortoise</i> symbolising the world.</li> <li>○ <b>Right:</b> The <i>Dragon</i> symbolising awe-inspiring power.</li> <li>○ <b>Left:</b> The <i>Tiger</i> symbolising courage and strength.</li> <li>○ <b>Front:</b> The <i>Phoenix</i> symbolising virtue, grace, wealth and power.</li> </ul>	<p>Location is equally important. People employ natural elements to make them feel more secure.</p> <p>There are various psychological models or theories trying to explain human motivation in location selection, namely Orian's Savannah theory, Kaplan and Kaplan's Information Processing theory, Ulrich's Psycho-evolutionary model, Appleton's Prospect-Refuge theory and Wilson and Kelling's Broken Window theory.</p> <ul style="list-style-type: none"> <li>• Humans prefer savannahs</li> <li>• with water;</li> <li>• a variety of open and wooded space (providing places to hide and game to hide);</li> <li>• trees that fork near the ground (providing escape possibilities) with fruiting potential a metre or two from the ground;</li> <li>• vistas that recede in the distance (including a path or river that bends out of view inviting exploration);</li> <li>• the direct presence or implication of game; and variegated cloud patterns.</li> </ul> <p>Desirable city districts have features related to naturalness, good upkeep, orderly appearance, openness and historical or social significance. These will all influence consumers' willingness to do business in the area.</p> <p>Road layouts also have an implication on the environment and in particular on the sense of community and belonging.</p>	<p>The <i>feng shui</i> principles afford an environment that is protected behind and on the sides with a vista in front. The evolutionary psychology perspective of preferring savannahs (vistas) combined with wooded spaces (affording security) supports the <i>feng shui</i> principles.</p>

<b>Design principle/element</b>	<i>Feng shui</i>	<b>Symbolism</b>	<b>Environmental Social Science</b>	<b>Comment</b>
<b>Time</b>	When a building was built, a semi-permanent energy (ch'i) is created that can also change when a building is remodelled.		Problems can be caused by using a building for a different purpose than it has been designed for originally. For example indoor air pollutants can be caused by a building designed as a workshop and now being used as offices.	Time is in both disciplines important, although from a different perspective.
<b>Location: “Greenscaping”</b>	The supply of fresh air and plants are useful in extracting harmful substances from the atmosphere and at least one plant should be at a desk – especially at computers. Nature e.g. vegetation, trees affect the energy (ch'i) flow and balance of people and their spaces.		Designers recognise the importance of greenscaping in communities, public buildings and housing developments. Natural views are favoured – trees provide oxygen, relief from heat, glare and visual stimulation. Apart from protection, green spaces also provide health benefits e.g. leafy vegetation absorbs pollution. Biophilia effect as one of the universal design principles – nature views and imagery reduce stress and enhance focus and concentration.	Environmental Social Science supports <i>feng shui</i> .
<b>Location: The neighbourhood</b>	An unfavourable location would be typified by for example vandalised buildings, a rundown neighbourhood and an area with no vegetation or where vegetation does not thrive.		The neighbourhood plays a critical role in perceptions as well as behaviour (for example crime, broken window theory).	Environmental Social Science supports <i>feng shui</i> .
<b>Front of building: Signage</b>	One must be able to recognise the right place at once, the signage should be easy to read at a distance, the lettering should be legible and the signs should be proportional to the size of the building (Hale, 2000; Hale & Evans, 2007; Smith & Stewart, 2006). There has to be signs outside and on the building, and if the building is shared with other occupants, inside the lift and where the lift opens (Hale, 2000; Hale & Evans, 2007). Directional signage should be simple, easy to locate, and easy to read. Elevators should be numbered a culturally appropriate way.		Way-finding is very important in Environmental Psychology. Signs and symbols are used to mark territory, creating defensible space markers. Overall perception of a space is influenced by how quickly and efficiently one can find your way.	Environmental Social Science supports <i>feng shui</i> .

Design principle/element	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comment
<p><b>Entrances and reception areas</b></p> <p><b>Lobby areas</b></p>	<p>Creates the first impression and should be in proportion to the building. It should be well maintained. There should not be a window opposite the entrance door – it may divert a person from the intended purpose.</p> <p>The lighting should be warm in temperature</p> <p>By rounding the corners and edges of the furniture, creates a softer and more inviting environment. By balancing colours and elements with interesting materials, finishes, and fabrics the impersonal lobby space can get a more inviting feeling. The colours in the lobby should reflect the energy (<i>ch'i</i>) required to be conveyed. Lobby paving patterns are often a graphic exercise to reinforce the overall design concept or the lobby geometry.</p>	<p>A reception area symbolises a moment of choice in life where several doors (practically and metaphorically) are open to new possibilities.</p>	<p>From an Environmental Social Science point, the lobby is:</p> <ol style="list-style-type: none"> <li>1. a strategic junction node (a point where activity converges for different purposes) as the point of entry and departure,</li> <li>2. a dual concentration node (an area where people gather for a common purpose, and</li> <li>3. establish the environment's image as it is the first space a person experiences upon entering.</li> </ol> <p>Ideally one would like it to create or inspire positive emotions.</p> <p>Entrance doors: The most accessible doors for people with limited mobility are double doors with a trigger sensor that slides it open. Accessibility is often improved by locating an automated sliding door next to the primary door.</p> <p>Purpose of a lobby is to establish the environment's image as it is the first space a person experiences upon entering. Ideally one would like to create or inspire positive emotions.</p>	<p>Environmental Social Science supports <i>feng shui</i>.</p>
<p><b>Reception desk</b></p>	<p>The reception desk should be to the right as people enter. The most natural movement of a person is a curve to the right.</p>		<p>People tend to see and remember items placed on the right side.</p> <p>A very early study in museums revealed that humans tend to have a right side bias.</p>	<p>Environmental Social Science supports <i>feng shui</i>.</p>

<b>Design principle/element</b>	<b><i>Feng shui</i></b>	<b>Symbolism</b>	<b>Environmental Social Science</b>	<b>Comment</b>
<b>Plants and water</b>	Plants and water play a critical role in <i>feng shui</i> , inter alia as part of the Five Elements. E.g. Lagatree (1997) states that moving water symbolises cash flow and fish encourage abundance. In an office the aquarium should be placed in the North. North governs career and business success and water is its element.	Fish tanks (aquarium with a water pump) – in China fish symbolise wealth (and spiritual wisdom, fertility and regeneration. Tiny darting fish create an active energy ( <i>ch'i</i> ) useful in commercial companies whilst larger, slower-moving sheaves create a calm atmosphere which may be useful in e.g. health practices. Plants symbolise balance and cosmological order and flowers represents a growth cycle and a crowning achievement.	The positive effect of plants is well documented and researched. For example potted plants at the front and back of classrooms, can serve as attention restorative features and people actually avoid outdoor spaces that are devoid of grass and trees. The use of indoor atriums in the workplace can be considered to increase workers' positive perception of spaces. Natural features, green areas, open spaces with pathways and water features are universally liked. Kopec (2006, p. 305) continues that if " <i>designers add suitable seating areas and shady trees, they have a template for designing plazas and urban parks</i> ". Plants increase humidity, absorb heat and sound and filter dust. Keeping relative humidity in the 25 percent to 60 percent range tends to minimize most health issues – although opinions vary greatly.	Environmental Social Science supports <i>feng shui</i> .
<b>Material and health</b>	Synthetic materials as an unnatural element are associated with health risks and should be kept to a minimum, especially where people spend a considerable amount of time.		Happy, productive and well-motivated workforce requires is a combination of design issues, ergonomics and sick building syndrome preventative measures. Presence of gaseous pollutants e.g., outdoor pollutants, formaldehyde as a resin used in particle board, fibreboard and plywood.	Environmental Social Science supports <i>feng shui</i> .

Design principle/element	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comment
<b>Air-conditioning</b>	Air conditioning is an unnatural element and is regarded as negative <i>feng shui</i> . Dry air conditioning will result in respiratory problems, throat irritations, tiredness and headaches.		In a study that compared air-conditioned libraries and naturally ventilated libraries, 40 percent of employees working in air-conditioned libraries were absent six days or more days per year compared to 22 percent in naturally ventilated libraries. There are indications that when occupants are dissatisfied with indoor air quality, the overall building satisfaction is low. The flexibility in manipulating the system is extremely important and the ideal would be to have independent, simple to operate controls for each area. Poor ventilation interferes with the body's ability to dissipate heat and can therefore have a negative effect on temperature. Temperature, ventilation and humidity depend on factors such as the configuration and materials in a building, the amount of window glazing, the size and volume of the space, the number of occupants, their current state of activity and the heating and cooling systems.	Environmental Social Science supports <i>feng shui</i> .
<b>Walls</b>	Concrete, ceramic or stone walls can convey a hardness or coldness and if the texture is rough, one needs to be careful. Wooden wall panelling, if reaching from ceiling to floor, may (depending on the colour) make a small room feel smaller.	A wall symbolises strength, privacy and containment and curtains the separation between different realms – either opening or concealing those.	Concrete, ceramic or stone walls may create the impression that one needs to be careful which can make people feel uncomfortable in the space	

Design principle/element	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comment
<b>Ceiling</b>	<p>The ceiling can be a cause of discomfort. A rough texture may make the ceiling feel heavier and create an uncomfortable feeling. If the light accentuates the roughness and the ceiling is not high, the impression may be created that the ceiling is lower than it actually is - low beams in the ceiling will have a similar effect.</p> <p>Beams in the ceiling may have a negative effect on the energy (<i>ch'i</i>) flow in the room and resulting in possible discomfort. Slanted ceilings have a similar effect.</p>		<p>From an Environmental Social Science perspective people prefer either flat or sloping ceilings that are higher. Sloping ceilings increase the perception of space and decrease the feeling of crowding.</p> <p>In contrast ceilings that are higher than usual and rooms that are more square than rectangular are preferred. It decreases the feeling of crowding.</p> <p>Beams can have an influence on the height of the ceiling.</p>	Environmental Social Science supports <i>feng shui</i> .
<b>Flooring</b>	<p>The floor should be the darkest, the wall intermediate and the ceiling the lightest (imitating nature). Stepping from a hallway with wood or a tight loop carpet into an office with a more plush cut pile carpet will give the immediate shift from “<i>public and practical</i>” to “<i>comfortable and private</i>” (Smith &amp; Stewart, 2006, p. 78).</p> <p>A wood surface appears solid and supportive, and a carpet more inviting. A highly polished or shiny floor surface may create the feeling that the surface is wet or slick and create an uncomfortable feeling. If the flooring is a shiny black or dark blue surface, it may come across subliminally as water. A concrete or dull hard surface may give the sensation of walking over rocks, which is not the most comfortable feeling.</p>		<p>Flooring can be a source of pollutants (and a contributing factor to sick building syndrome) and depending on the material, also sound dampening. Flooring can be used to delineate areas – the Gestalt design principle of similarity for example applies – elements which are similar, are perceived to be related.</p>	



Design principle/element	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comment
<b>Electrical and technological equipment</b>	<p>Electromagnetic radiation from electrical equipment is a health hazard. No desks should be placed near the area where the main power enters the building.</p> <p>Do not face or sit with one's back to the rear of a monitor. The toner of photocopiers gives off chemical emissions which can be carcinogenic.</p>		<p>The United States National Institute for Safety and Health (NIOSH) reports that the sick building syndrome symptoms are caused by contamination from inside the building (e.g. photo-copying machines, pesticides, boiler additives, cleansers, tobacco smoke, gases from cafeterias and laboratories).</p>	
<b>Position of desk</b>	<p>It is almost impossible to work well with one's back to the door. The same applies to open-plan offices. The best position for a desk is diagonally opposite the door where one can see anyone entering the room. Those facing the door are in the firing line and those closest to the door are constantly interrupted.</p> <p>Sitting with one's back to a door or a window will cause the employee to feel uneasy and nervous (refer to <i>commanding position</i>) and violates the most basic principle in <i>feng shui</i>: feeling comfortable.</p>		<p>The use of smooth and simple lines increase a worker's positive perception of spaces – also enabling people to move about a room safely inter alia by having enough light.</p> <p>In terms of the <i>commanding position</i>, people locate themselves in a space according to clear patterns – people in restaurants tend to sit around the periphery rather than in the middle. People tend to wait out of traffic flow near for example pillars which also provide something to lean against in the absence of seats. This indicates a human preference to be positioned near a solid structure that can afford protection</p>	See commanding position.
<b>Communal staff areas</b>	<p>Communal staff areas are places to relax and therefore Smith and Stewart (2006) propose having the calmness of cool colours, (especially greens, but “gray is apt to depress one's energy and blue tends to kill the appetite”).</p> <p>The furniture should look and be comfortable and substantial.</p> <p>Cheap-looking pieces, poor lighting and poor quality artwork will communicate a message to the employees about how important, or not, management views them to be.</p> <p>Round tables will enhance a feeling of collegiality.</p>		<p>The importance of having areas where staff can relax, cannot be denied. “<i>Workplace has good places for breaks</i>” ranked seventh on workplace qualities with the strongest effects on productivity and job satisfaction. This is based on their research conducted from 1994-2000 amongst 13 000 people in 40 business units.</p> <p>The inclusion of/access to semi-public spaces increases development of socializing behaviour.</p>	Environmental Social Science supports <i>feng shui</i> .

<b>Design principle/element</b>	<i>Feng shui</i>	<b>Symbolism</b>	<b>Environmental Social Science</b>	<b>Comment</b>
<b>Open-plan offices</b>	In open-plan offices, when seated, panels should be high enough to block the view of adjacent workstation staff. Lower partitions contribute to more light. Acoustic partitions with sound deadening material should be provided. Carpets and plants will also absorb some of the sound.		Open-plan offices are based on the principle that communication between employees will increase. It allows for flexibility and is less expensive, but it is insufficient in addressing privacy needs as well as acoustic and aural distractions. Where physical boundaries are removed, stronger behavioural boundaries are erected to ensure that organisational identities are reserved and create defensible territory.	See commanding position.
<b>Meeting table</b>	Round tables do not encourage anyone to sit down or not for long – but are ideal for meetings which should be kept short.	A round table symbolises equality as there is no “ <i>head of the table</i> ”.	Horseshoe or circular seating arrangements increase visibility, attentiveness and participation.	
<b>Furniture design</b> <b>Furniture material</b>	Furniture should be ergonomically designed, with the positioning of furniture in such a way that the movement of people should not be hindered. There should be no access obstacles, the corners of furniture should be rounded to assist/promote flow and corners should not point at anyone working close by. Furniture from chrome and glass chairs and tables will have a much colder and more aloof feeling compared to furniture from wood and fabrics.		The basics to address in ergonomics are posture, tasks, lighting, temperature, furniture and equipment. Stability, clearance and support are three critical factors in ergonomics. The use of smooth and simple lines increases a worker’s positive perception of spaces – also enabling people to move about a room safely (by having enough light).	

Design principle/element	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comment
<b>Shape</b>	A regular shape (rectangle, square, or round) has the most comforting impact on an individual and is used in many cultures. According to <i>feng shui</i> practitioners the most ideal type of space is a “ <i>regular</i> ” square or rectangle, which provides energy ( <i>ch'i</i> ) balance, equilibrium and harmony.		Square rooms are preferred when compared to rectangular rooms. Applying the Golden Ratio will result in a rectangular room, is a standard consideration in design and one of the universal design principles (see also the Rule of Thirds and the Fibonacci sequence). The Golden Ratio is found throughout nature, in art and in architecture and in the human body, appearing in pinecones, sea shells, the paintings of Leonardo da Vinci, the violins of Stradivari, the Parthenon, Stonehenge and Great Pyramid of Giza. Early artists and architects subconsciously incorporated the ratio in their designs.	Environmental Social Science supports <i>feng shui</i> .
<b>Staircase</b>	Staircases and escalators should not face the front entrance. Also a spiral staircase acts as a corkscrew through the building. Staircases and escalators facing the front entrance will prevent <i>ch'i</i> -energy from circulating properly.	Stairs symbolises steps on the spiritual road to enlightenment and knowledge. Symbolically a winding staircase (where the upper and lower levels are unseen) is a symbol of the mysterious and a spiral staircase indicates “ <i>a journey fraught with doubt</i> ” (Wilkinson [Ed.], 2008).	The following should be considered in staircase design: <ul style="list-style-type: none"> <li>• Traffic type and volume will determine the width.</li> <li>• Safety aspects include having handrails, non-skid surfaces, defined stair edges and fire doors.</li> <li>• Fatigue relates to step height and the length of the stairway. Reducing the distance between steps (landings) can reduce fatigue.</li> </ul>	

Design principle/element	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comment
<b>Corridors</b>	Long straight corridors are discouraged. Energy ( <i>ch'i</i> ) is funnelled too quickly. Energy ( <i>ch'i</i> ) flow through a space impacts on stress levels and behaviour. Straight lines are negative and destructive. Curvy, wavy and wiggly lines are like wind and water and therefore positive.	A corridor symbolises the twists and the turns of the pathway through life.	Although the reasoning and rationale differs, a long corridor is also discouraged from an Environmental Psychological perspective. Long corridors increase the feelings of crowding. Architectural depth will result in less psychological distress and social withdrawal. Negative psychological effects of long corridors or hallways can be lessened by placing lounge or cluster suites intermittently along corridors, changing colour schemes or modifying hallway widths. Design guidelines for corridors: <ul style="list-style-type: none"> <li>• The corridor should be well-lit for clear visibility.</li> <li>• Intruding items such as cabinets, door opening into corridor should be avoided.</li> <li>• Noise levels will be determined by the activities taking place in areas adjacent to the corridor</li> </ul> Signposts should be clear indicating everyday and emergency use	
<b>Columns Beams</b>	It is argued that columns block the flow of energy ( <i>ch'i</i> ) in much the same way as beams and people will feel uncomfortable when the edges of straight-sided columns point at where they are sitting. The ceiling can also be a cause of discomfort. A rough texture may make the ceiling feel heavier and create an uncomfortable feeling. If the light accentuates the roughness and the ceiling is not high, the ceiling may appear lower than it actually is - low beams in the ceiling will have a similar effect.		Not much is said about beams and columns, except from a health and safety perspective for example a low beam or columns with sharp corners.	

Design principle/element	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comment
<b>Doors</b>	Doors that are larger than normal are effectively used in public buildings and businesses. Doors that are larger than normal indicate that all are welcome.	A doorway symbolises the divide between the sacred and the profane, the transition from one stage of life to another, an entrance to another world (for example another room) or another state of being. In the Chinese tradition, an open door is thought of as active (yang) and closed door as passive (yin) and the opening and closing of a door represents the “cosmic dance” between yin and yang.	<b>Entrance doors:</b> Many designers opt to retain the elegance and sophistication associated with revolving doors or the grandeur associated with tall heavy doors, because of the symbolism associated with entry and exit points. The greatest degree of territorial control is afforded by doors and locks whilst the greatest opportunity for territorial infringement is afforded by cubicles and open-office designs. The placement of doors can facilitate or inhibit interaction between people. The distance between doors can also play an important role in the formation of friendships.	
<b>Door swings</b>	A door should always open inwards. Revolving doors, automatic sliding doors, and doors that swing are recommended. A door that open inwards enhances the natural flow of energy (ch'i) as it pulls people in rather than stopping their forward movement. Revolving doors, automatic sliding doors, and doors that swing in both directions assist in energy (ch'i) flow.		Not much attention is given to door swing.	

Design principle/element	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comment
<b>Lighting</b>	<p>Natural daylight is best.</p> <p>The lack of light is considered to have a negative effect on virtually every aspect of life.</p> <p>Bright lights promote healthy flowing energy (<i>ch'i</i>).</p>	<p>On a symbolic level, light symbolises illumination, knowledge and the divine.</p>	<p>With specific reference to open-plan cubicles, having a window in a cubicle has a positive effect on satisfaction with lighting. It connects the person to the outside world and contributes to the ability to cope with stressful situations.</p> <p>Many authors indicate that fluorescent lighting is not the ideal. Natural light is the best and therefore any design should incorporate large unobstructed windows to bring in more natural light.</p> <p>Where there cannot be enough natural lighting, natural lighting can be enhanced by full-spectrum diffused ceiling lighting, task lamps at each desk to illuminate the task at hand.</p> <p>A top-left light source will result in more natural looking objects or environments.</p>	<p>Environmental Social Science supports <i>feng shui</i>.</p>
<b>Windows</b>	<p>See lighting.</p>		<p>Voluminous research indicates that people prefer rooms with windows. Views of nature are not only fundamental to well-being and satisfaction, but also provide opportunities for both prospect refuge and restorative experiences.</p> <p>With specific reference to open-plan cubicles, having a window in a cubicle has a positive effect on satisfaction with lighting. It connects the person to the outside world and contributes to the ability to cope with stressful situations. Natural views restore effectiveness by experiencing a view that requires no effort and engendered a sense of being away (Attention Restoration Theory – ART).</p> <p>Having a window that can open or close, increases the perception of control over temperature, ventilation and lighting and self-rated productivity.</p>	<p>Environmental Social Science supports <i>feng shui</i>.</p>

Design principle/element	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comment
<b>Glare</b>	<p>Natural light should be filtered to reduce glare through vertical blinds, plants or movable screens.</p> <p>Glare creates <i>sha ch'i</i> (negative energy) and one needs to be careful of windows on the side of a desk.</p>		See fluorescent lighting.	
<b>Fluorescent lighting</b>	Fluorescent lighting can be depressing, causing lethargy, headaches, nausea, poor eyesight, stress and fatigue.		A cause of sick building syndrome is artificial lighting, fluorescent lighting that produces a photochemical smog, white fluorescent light is likely to cause eyestrain and headaches. Inadequate illumination glare, flicker and lack of contrast can cause tiredness, dry and gritty eyes and headaches.	Environmental Social Science supports <i>feng shui</i> .
<b>Artwork and mirrors</b>	Used to support the five elements in conjunction with the primary purpose.		<p>Artwork serves people the following main ways:</p> <ul style="list-style-type: none"> <li>• It provides pleasure.</li> <li>• Influences the assessment of our environment and among other things determines whether we value the environment.</li> <li>• Through artwork we can provide signs or symbols of our environment as well as reshape, transform or translate the environment.</li> <li>• Exercising our information processing capacities.</li> <li>• Express and define our personality or sense of identity.</li> </ul> <p>Architectonic details (including artwork) provide a non-verbal communication system in which messages are conveyed – about for example status, identity of users, the history of the organisation or a subgroup like a team.</p>	

<b>Design principle/element</b>	<b><i>Feng shui</i></b>	<b>Symbolism</b>	<b>Environmental Social Science</b>	<b>Comment</b>
<b>Clutter</b>	Get rid of clutter and keep surfaces clear. Stacks of files for example will block the free flow of energy ( <i>ch'i</i> ), which is essential to concentrate and be creative. Clearing out clutter gives one the opportunity to let go of that part of your past that may be blocking you and keeping you from moving on. We are subconsciously being reminded on a constant basis that we have uncompleted tasks and therefore we are unable to devote all of our energy ( <i>ch'i</i> ) and attention to the task at hand.		Used more in the context of personalization – allowing people to personalise a space or not. In Environmental Social Science there is not a clear cut distinction between clutter and personalization. Employees working in open-plan office (cubicles) establish their spaces through décor, signs, colours and artworks serving as territorial markers. It provides a sense of identity, control and purpose. Incorporating detail can make the employee feel special which relates to higher morale and job-satisfaction. Even something simple as variation in table and desk shapes can increase satisfaction. Personalisation positively affects the individual's environmental satisfaction, well-being and overall job satisfaction, as well as corporate culture. Our environment should not be too cluttered or complex, but it should have some complexity to make it interesting. Clutter is defined as different objects, different colours, and different forms competing against each other to be figure or background. The concept of keeping things simple is a universal design principle, namely the 80/20 rule where the noncritical less important 80 percent should not be emphasized or even be removed. The principle of simplicity is also applicable to design.	



<b>Design principle/element</b>	<i>Feng shui</i>	<b>Symbolism</b>	<b>Environmental Social Science</b>	<b>Comment</b>
<p><b>Colour</b></p> <p><b>The psychological effect of colours</b></p>	<p>The ideal colour arrangement in a space should simulate nature - the light value of the high sky (blue with white clouds – the ceiling), the midrange values in the objects at our eye level (buildings, forests, distant hills – the walls), and the dark value of the earth below our feet (the floor).</p>		<p>Colour and its emotional associations have been the subject of many studies. Emotional reaction to colour is determined by hue, brightness and saturation but that there is often too much emphasis on hue. Brightness and saturation often have a greater effect on emotional reaction to colour than hue. The emotional reaction to colour can both be innate or learned within a cultural context.</p> <p>Warm colours stimulate the optic nerve and when combined with bright lighting, increase blood pressure, heart and respiratory rates, muscle tension and brain activity. The reverse psychological response is true with the use of cool colours. People’s colour perceptions and reactions are linked to cultural style with historic and symbolic references as well. From an Environmental Social Science perspective, using lighting and brighter colours will enhance worker’s perceptions of a workplace. Bright and light colours tend to advance and dim and dark colours tend to recede. Use warmer colours with lighter tones in communal areas for example gymnasiums, auditoriums and lunchrooms.</p> <p>Brebner (1982) suggested that the meanings of colours have been derived from nature. In a study amongst college students the relationship between colour and emotion is closely related to colour preference and colour preference is closely related to whether a colour elicits a positive or negative feeling.</p>	

Design principle/element	<i>Feng shui</i>	Symbolism	Environmental Social Science	Comment
Sound	<p><i>Feng shui</i> practitioners regard wind chimes and water as important ways to introduce sound into an environment. Wind chimes and water create a soothing sound environment. Wind chimes are both welcoming and may add energy (<i>ch'i</i>) to a recessed doorway. Yang energy (<i>ch'i</i>) can be brought to a space by water (Smith &amp; Stewart, 2006).</p>		<p>More emphasis is given in Environmental Social Science to noise reduction and management than sound. Three sources of noise are: reverberation (sound that occurs when sound waves rebound from hard, flat surfaces), internal noise (e.g. voices) and external noise (e.g. traffic). Reverberation is a product of room configuration (parallel walls), surface finishes (hard or soft), material density (solid or hollow) and air tightness (sound transfer). Noise can be reduced or enhanced by changing the room size, internal surface dimensions (walls, ceilings, floors and windows) and surface materials (chairs, desks, flooring, wall covering and ceiling treatments). Internal noise is difficult to eliminate (sounds from computers, light etc.) and external noise can be controlled by for example sound damping, walls and tall trees. Glass is a sound reflector and contributes to reverberation and sound propagation from one side of the room to the other. To prevent these negative effects absorbing materials need to be included in design.</p> <p><b>Handling of the sound environment:</b></p> <ul style="list-style-type: none"> <li>• Use sound absorbing materials.</li> <li>• Supplement open-plan offices with sound insulated rooms.</li> <li>• Involve an acoustic expert.</li> <li>• Educate and inform users:</li> <li>• Give employees advice how to behave and what to expect from acoustic conditions in the office.</li> </ul>	

## Chapter 5

### 5. METHODOLOGY

*“Real knowledge is to know the extent of one's ignorance.”*  
attributed to Confucius

#### 5.1. INTRODUCTION AND OVERVIEW

To address the objectives stated in Chapter 1, a **qualitative-descriptive approach** will be followed. Reaching consensus on a definition of qualitative research is complicated by the utilisation of multiple methodologies and research practices across many disciplines (Denzin & Lincoln, 1994, p. 3). According to Snape and Spencer (2005) it is easier to define qualitative research in terms of its characteristics than the concept. They summarise the common key elements of qualitative research as follows (Snape & Spencer, 2005, p. 3):

1. The **aim** is to interpret and provide an in-depth understanding of the world.
2. The **sample** is small and purposively selected samples are used (a non-probability sample).
3. **Information collection** involves close interactive contact between the researcher and research participants. Issues can be explored as they emerge.
4. The **information** is detailed, rich, extensive and in-depth.
5. **Analysis** is open to new emerging concepts, resulting in detailed classification and description, developing typologies and explanations.
6. The **output** focuses on the interpretation of meaning, reconstructing and presenting the view of the participant.

The qualitative methodology is favoured in the field of environmental psychology because of the applied nature as well as the complexity of the field (Viljoen, Henning, Van Staden, Grieve & Van Deventer, 1988, p. 19). The decision whether qualitative methodology should be used or not is determined by the objectives. A qualitative approach is appropriate when the study phenomena are (Ritchie, 2005, pp. 32-33):

1. Ill defined or not well understood (*author's note* – or to gain a better understanding or more in-depth understanding)
2. Deeply rooted
3. Complex

4. Specialist
5. Delicate or intangible
6. Sensitive.

Qualitative research is largely associated with interpretivism. Interpretivism (as opposed to positivism) proposes that “*the social researcher has to explore and understand the social world through the participant’s and their own perspectives. Explanation can only be offered at the level of meaning rather than cause*” (Snape & Spencer, 2005, p. 23).

Denzin and Lincoln (1994, pp. 12-15) divide the qualitative research process in five phases. The five phases are:

**Phase 1:** The researcher as multicultural subject: Our realities are influenced by characteristics such as language, gender, social class, race, and ethnicity. “*There are no objective observations, only observations socially situated in the worlds of the observer and the observed*” (Denzin & Lincoln, 1994, p. 12). Before commencing research process, the researcher should be aware of the history and research traditions, ethic and politics in qualitative research as well as conceptions of the “*self*” and “*others*”.

**Phase 2:** Interpretive paradigms: The interpretive framework contains the researcher’s beliefs in terms of epistemology (the relationship between the researcher and the known), ontology (what kind of being is the human being and what is the nature of reality), and methodology (how do we gain knowledge from the world). According to Denzin and Lincoln (1994), four major interpretive paradigms structure qualitative research, namely positivist/postpositivist, constructivist-interpretive, critical, and feminist-poststructural. Other labels used are for example empirical, interpretive, critical, and deconstructivist (Piantanida & Garman, 1999). Denzin & Lincoln (1994, pp. 13-14) assert that the constructivist-interpretive paradigm assumes a relativist ontology (there are many realities), a subjective epistemology (observer and observed create understandings), and a naturalistic (in the natural world) set of methodological procedures.

**Phase 3:** Research strategies: The research strategy involves research design which will be the most appropriate to answer the research questions.

**Phase 4:** Methods of collection and analysis: several methods are available, ranging from interviews to direct observation.

**Phase 5:** Interpretation and Presentation: A creative process with no single interpretive truth.

## 5.2. APPROACH AND METHOD

As mentioned in the introduction a **qualitative-descriptive approach** was followed. The function of qualitative research is fourfold (Ritchie, 2005, p. 27), namely:

1. **Contextual:** describing the form or nature of what exists;
2. **Explanatory:** examining the reasons for, or associations between, what exists;
3. **Evaluative:** appraising the effectiveness of what exists;
4. **Generative:** aiding the development of theories, strategies or actions.

This study has an **explanatory function**. Explanatory research makes it possible to identify (Ritchie, 2005, p. 27)

1. the factors or influences that underlie a particular attitude, belief or perception
2. the motivations that lead to decisions, actions or non-actions
3. the origins or formation of events, experiences or occurrences
4. the context in which phenomena occur.

According to Viljoen et al. (1988) the three major research methods used in environmental psychology research studies are the experimental, the correlational and the descriptive methods. In the experimental method, causality is determined and verified. According to Viljoen et al. (1988) the **experimental** method involves the systematic manipulation of an independent variable, for example, noise and then to observe the effect on the dependent variable, for example, attention. The experimental method can be used either in a laboratory or field setting, but in laboratory settings internal validity is higher and variables can be more successfully controlled or manipulated. The artificial environment in laboratory settings or in field experiments with simulations is a major disadvantage and therefore generalisability is questionable.

In the **correlational** method variables are manipulated as the information gathered is about naturally occurring events. For example, one can observe or assess the correlation between crime (the situational variable) and density. No causal inferences can be drawn as other variables can be the reason for an influence. The two main types of correlational studies are naturalistic observation (obtrusive or unobtrusive observation of behaviour in natural settings) and survey research (for example, personal interviews to establish personal experiences and attitudes in, or toward particular settings). Correlational methods are less sophisticated compared to experimental methods as variables cannot be manipulated, but as artificiality is not a problem generisability is less questionable.

The third method is the **descriptive method** and was used in this study. According to Viljoen et al. (1988) the descriptive method does not yield causal information which is statistically verifiable and it does not make statistical observations or assess relationships between variables. This method is used more often in environmental psychology than in other fields of psychology. Studies using the descriptive method tend to be more qualitative and present descriptive accounts of reactions to particular stimuli or situations. But, it must be borne in mind that individuals can seldomly give full explanations of actions and intentions. The descriptions and reasons provided are influenced by their experiences and characteristics (Denzin & Lincoln, 1994, p. 12).

**In-depth interviews** were conducted. According to Ritchie (2005) individual in-depth interviews afford the opportunity to investigate people's personal perspectives and understand their personal context more in depth as well as having more detailed subject coverage. In-depth interviews are particularly suited for topics that require a deeper understanding of complex, delicate or deeply rooted phenomena because it provides the opportunity to clarify and gain a deeper understanding (Ritchie, 2005).

According to Viljoen et al. (1988) two information collection techniques, namely unobtrusive or obtrusive measurement can be employed. In **unobtrusive** measurement the participants are unaware that they are being researched. The main advantage is that participants and responses are not affected by being researched, but it raises ethical questions about invasion of privacy and the lack participant consent.

In this study **obtrusive measurements** were employed. In **obtrusive** measurements the participants are fully aware that they are participating in research. The most frequently used obtrusive measurement technique is self-reporting about behaviour, attitudes, feelings or experiences. The main disadvantage of obtrusive measurement is that people may act differently if they are observed. This is described as the **expectation effect** where perception and behaviour change as a result of personal expectations or expectations of others (Lidwell et al., 2003). For example: the halo effect where participants rate aspects higher based on their overall positive impression of a concept or interviewer or the demand characteristic effect where participants provide responses or act in a way that they believe the interviewer expects (Lidwell et al., 2003, p. 68). *Author's note:* Also included are participants giving socially desirable responses and seeking approval from interviewers or observers.

Canter (1974) refers to various studies that have been conducted comparing different methodologies such as drawings vs. photocopies; actual movements in the gallery vs. those who selected a route on the basis of slides which they were shown; a full scale mock-up vs. a small model; and film based on a model vs. films and drives around an actual area. Close similarities were found between the judgements in the various media. Michelson (1990) also reports that as actual experiments are very expensive, the best solution would be to try and find natural settings that closely resemble the required situation, but this may prove to be difficult.

### 5.3. SAMPLE AND SAMPLING

The sample and sampling characteristics of this study are discussed below.

#### 5.3.1. Sampling methodology

Samples can be broadly divided into probability and non-probability samples. Probability sampling is the most rigorous approach but inappropriate for qualitative research (Ritchie, Lewis & Elam, 2005). The sampling methodology used in this study was therefore a **non-probability** sample. In a non-probability sample participants are selected in a non-random manner without knowing the probability of selection (Levine, Stephan, Krehbiel & Berenson, 2008). The intention for the sample is not to be representative.

The sampling technique used in this study was **judgement** sampling, also known as criterion or purposive sampling. Judgement sampling entails the use of judgement in selecting participants: selecting participants because of particular features which will assist in-depth exploration and understanding of the research subject (Ritchie et al., 2005).

According to Ritchie et al. (2005) **judgement or purposive sampling** has two objectives, namely to ensure that characteristics relevant to the study are covered and also that “*within each of the key criteria, some diversity is included so that the impact of the characteristics concerned can be explored*” (Ritchie et al., p. 79). The sampling method used can be described as a stratified purposive sampling. A stratified purposive sampling can be described as a hybrid approach in which fairly homogenous groups are selected in order to compare subgroups (Ritchie et al., 2005; Patton, 2002).

#### 5.3.2. Sample universe

The universe of the sample was office employees who have worked in an office for at least two years. The initial requirement of five years office experience was reduced to



two years as it was particularly difficult to find younger respondents with five years' office experience.

### 5.3.3. Sample and sampling area

The sample was stratified according to age, gender and population group. Participants were split into two age groups namely 16-34 years and 35 years and older, two population groups, namely black and white (including one coloured respondent), and gender. The intention was to only have a black and white group, but one respondent classified herself as coloured. Her responses were included in the white group, because she regarded herself to be closer to the white group in terms of culture. Initially the age requirement for the younger group was 30 years. This was raised to 34 years, again because of difficulty finding younger people with office experience.

The stratification variables were selected, because of the following reasons:

1. **Age:** As we age our needs, goals, purposes and status change which influence our levels of satisfaction (Kopec, 2006). One can therefore expect that there would be differences between older and younger participants in perceptions and needs.
2. **Gender:** Many research projects have reported differences between males' and females' assessment of their environment. Kopec (2006, p. 138) summarises it as follows: "*women are likely to prefer environments that have greater functionality, intimacy, and originality, while men are likely to prefer more simplicity and personal space in their environment*" (Kopec, 2006). "*Perhaps for many men the world is a place to do things, while for women it is a place to relate to things (and others)*" (Franck, 2002, p. 349).
3. **Population group:** Culture is closely related to population group and according to Kopec (2006) culture influences values, norms and artefacts, which in turn can influence the way we perceive and experience our environment. Population group is used in this study as a representation of culture. White and Coloured respondents are representing a mainly Western cultural background and Black respondents a mainly African cultural background. In a multi-cultural society such as South Africa, there is a cross-pollination between cultures and no cultural representation is pure.

All participants were based in **Gauteng** – distributed between Pretoria, Johannesburg and the Vaal Triangle.

#### 5.3.4. Sample realisation

A total of 25 full interviews were conducted. One interview which was only partly completed, has been used in the analysis, but is not included in this count. The interviews were planned and realized as follows:

**Table 5.1 Sample realisation**

	Male							
	16-34				35+			
	Black		White/Coloured		Black		White/Coloured	
	Planned	Realised	Planned	Realised	Planned	Realised	Planned	Realised
1	x	x	x	x	x	x	x	x
2	x	x	x		x	x	x	x
3	x		x		x		x	x
4								x
<b>Total</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>4</b>
	Female							
	16-34				35+			
	Black		White/Coloured		Black		White/Coloured	
	Planned	Realised	Planned	Realised	Planned	Realised	Planned	Realised
1	x	x	x	x	x	x	x	x
2	x	x	x	x	x	x	x	x
3	x	x	x	x	x		x	x
4		x		x				x
5								x
6								x
<b>Total</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>6</b>

Challenges experienced with sampling:

1. It was especially difficult to find young men with the minimum required office experience (partly because of the high unemployment rate and partly because of their experience being in non-office environments).
2. Men were not particularly interested in the topic and it was difficult to find males who were willing to commit an hour of their time to a subject they were not comfortable with or interested in.

#### **5.4. INFORMATION COLLECTION OVERVIEW**

##### **Interviewers**

Three independent and experienced qualitative interviewers conducted the interviews. Independent interviewers were used to minimise bias. The interviewers had no insight into the underlying principles assessed and could therefore not steer the responses in a desired direction (within the limitation of subjectivity in qualitative research).

The interviewers were female (two white, one black) and were selected for their theoretical background in research in general, and qualitative research in particular, as well as their extensive interviewing experience. The emphasis in selecting interviewers was on experience and knowledge and not on matching participants and interviewers demographically. They were, however, matched on preferred language of the participants. The researcher trained the interviewers to ensure inter- and intra-interviewer reliability.

##### **Interviewing schedule**

The instrument was developed based on the literature study in chapters three and four as well as two initial interviews. Initially the plan was to have an open ended in-depth discussion asking for examples of what people liked and disliked with regards to design and layout aspects in their office environment. This approach was piloted with two initial interviewees but it was decided to change the approach to one where specific concepts and probes were included.

The process of development of the interviewing schedule was based on Herschberger's (2002, p. 303) steps to develop a measuring instrument, namely:

1. Goals and objectives of utilising the interviewing schedule were listed.
2. It was determined who the respondents would be.
3. A schedule of the types of questions was prepared.
4. Specific questions for each concept were developed.
5. Each question was analysed to determine whether questions can be combined or eliminated.
6. Questions were answered as if the researcher were a respondent.
7. Questions were revised to make it clearer.
8. The questionnaire was pretested with respondents with similar characteristic as the target group.
9. Questions were again revised to make it clearer.

In designing the interviewing schedule a comparison was made between *feng shui* elements and environmental social research. Based on this a questionnaire was designed following the process described below:

- Elements which were **supported** in **both *feng shui* and environmental social research** were **not** considered to be **included** in the interviewing schedule.
- ***Feng shui* elements** which were **not supported in environmental social research** were **included** in the interviewing schedule.
- **Philosophical principles** and **elements not addressed in environmental social research** were **included** in the interviewing schedule.
- Elements which are based on **esoteric principles (e.g. the Bagua)** were **not** considered to be **included**.

Based on the above the following elements were included:

#### **5.4.1. CONCEPT 1: The five elements (Water, Earth, Metal, Fire, Wood)**

The purpose of this section was to establish the association with each of the five elements (water, earth, metal, fire and wood) and how each would translate into a

design element e.g., colour, material, walls, floors, ceilings and furniture. The five elements are fundamental to a large number of *feng shui* design principles.

**Principle(s) explored:** Understanding the associations symbolising the various elements in the context of design and how these associations and symbolism could be translated into design elements to visually communicate values and visions as well as to create ambience.

**Research question:** What are the underlying associations with each of the elements? What are the associated design elements?

#### 5.4.2. CONCEPT 2: Location

The purpose was to explore the associations with the Four Animal Theory (see paragraph 4.1.1). The principle is also related to the prospect-refuge theory, the back and side buildings will protect and one would have a full view of the front.

**Principle(s) explored:** The perception that the layout as it was illustrated would put the occupant in a commanding position by protecting the back and sides and have a full view of the front. It will also assess the applicability of prospect-refuge theory in this layout.

**Research question:** Will the principles be supported as expounded by the prospect-refuge theory and commanding position? Why or why not?

#### 5.4.3. CONCEPT 3: Roads

The purpose was to explore which locations in relation to roads could be regarded as better or worse positions. According to *feng shui*, road positions A, B and C should be selected as the best positions.

**Principle(s) explored:** Perceptions of various road layouts in relation to participants in terms of ease of access, safe access, noise and a general feeling of comfortableness are established.

**Research question:** What road positions will be selected as the best position? Why or why not?

#### 5.4.4. CONCEPT 4: Lobby plan

The purpose was to establish the general feeling regarding a lobby plan layout. According to *feng shui*, participants should prefer the receptionist on the right, the visitor on the left, the door and window behind the receptionist, and visitors should be regarded as making the users uncomfortable.

**Principle(s) explored:** Firstly, the tendency for the majority of people to first look or reach towards the right (right hand bias) is assessed. Secondly, it is assessed that being out of the direct line of the door where people can see the occupant, having a full view of the room and door, being further from the door and the back positioned towards the wall i.e. a strong support behind the occupant would be the best position to sit (the commanding position).

**Research question:** Will the right hand bias concept be supported? Will the commanding position be supported? Why or why not?

#### 5.4.5. CONCEPT 5: Reception area

Based on the lobby plan in Concept 4, specific elements were changed with the purpose to establish the validity of the right hand bias – having the reception desk on the right vs. left and in front, sitting with back to door and window. According to *feng shui*, layout A should be selected as the preferred layout.

**Principle(s) explored:** The same concepts as with the lobby plan (see paragraph 5.4.4), namely the right hand bias and commanding position, is established.

**Research question:** Will the right hand bias concept be supported? Will the commanding position be supported? Why or why not?

#### 5.4.6. CONCEPT 6: Commanding position: Boardroom

The purpose was to establish participants' perceptions regarding the commanding position in the case of:

- an oval table with one door,
- an oval table with two doors,
- a round table with one door, and

- a round table with two doors.

Participants were requested to indicate the most comfortable and the most uncomfortable positions as well as the position the person in authority would sit.

According to *feng shui*:

- an oval table with one door: Positions 3, 4 or 5 should be preferred,
- an oval table with two doors: Positions 4, 5, 6 or 7 should be preferred,
- a round table with one door: Positions 2, 3 or 4 should be preferred, and
- a round table with two doors: Positions 3, 4 or 5 should be preferred.

**Principle(s) explored:** Establishing whether the form of a table could have an influence on the way people interact, where they would prefer to sit and which positions would be uncomfortable, as well as whether the form could have an influence on the perceptions of the position of authority. The assessment was done in relation to the number of doors.

**Research question:** Which positions will be regarded as the commanding position? Which positions will be regarded as the most uncomfortable? Which positions will be regarded as the most comfortable? Where will the person in authority sit?

#### 5.4.7. CONCEPT 7: Commanding position: Office space

##### Multiple occupants shared space

The purpose was to establish which desk position the participant would prefer in a shared space as well as the spontaneous preference of desk positioning in the case of single occupancy (participants were requested to draw the preferred positioning). According to *feng shui*, position 1, 2, or 3 should be preferred.

**Principle(s) explored:** Establishing the perception of the positions where occupants would feel the most comfortable when sharing office space with other occupants. In assessing the space not only the physical environment would be taken into account, but also aspects such as privacy, personal space and access in relation to others.

**Research question:** In a multiple occupant space, which positions will participants select as the preferred desk positioning and why?

### **Single occupant**

The purpose was to establish the spontaneous preference of desk positioning in the case of single occupancy (participants were requested to indicate the preferred positioning).

**Principle(s) explored:** Establishing the perceptions of the best position in a single occupant office space.

**Research question:** In a single occupant space, which positions will be the preferred desk positioning and why?

### **5.4.8. CONCEPT 8: Large and small single occupancy: Desk positioning**

Following the spontaneous desk positioning in Concept 7, a layout highlighting specific elements was presented with the purpose of establishing preferred desk positioning, specifically relating to the commanding position. After the concepts were presented and unpacked, participants were again asked to indicate their preferred desk positioning. According to *feng shui*, for both the large and small office layouts, layout A should be preferred.

**Principle(s) explored:** Establishing the perceptions of the best position where an occupant would feel most comfortable in either a large or a small space. The reasoning would indicate to what extent the commanding position as described in paragraph 5.4.4 would come into play.

**Research question:** In a large and small single occupancy space, which desk positioning will be preferred and why?

### **5.4.9. CONCEPT 9: Open-plan cubicles**

Various layouts for cubicles were presented to participants, requesting them to indicate their preference and reasons for it. According to *feng shui*, layout F should be preferred.

**Principle(s) explored:** Perceptions of the most comfortable open-plan layout will be established as well as the reasoning behind the selection, inter alia the trade-off between privacy and very limited space.

**Research question:** In an open-plan cubicle layout, which layout will be preferred and why?



#### 5.4.10. CONCEPT 10: Boardroom table

Square, oval and round boardroom tables were presented to participants and they were requested to indicate which are more conducive to discussion and which would make them feel more comfortable. According to *feng shui*, table form A (oval) and C (round) should be preferred.

**Principle(s) explored:** Establishing the perception of the influence of the boardroom table's form on interaction as well as the preferred seating position. Where in Concept 6 the participants were not made aware of the table form, in this concept they are directly asked which table form will be most conducive to discussion and which would make them feel more comfortable.

**Research question:** Which boardroom table form will be regarded as more conducive to discussion and why? Which boardroom table form will be regarded as more comfortable and why?

#### 5.4.11. CONCEPT 11: Desk corners

Desks with sharp corners and rounded corners were presented to find out which and why it is preferred. In *feng shui* sharp corners are referred to as “*poison arrows*”. According to *feng shui*, desks B and D with the rounded edges would be preferred.

**Principle(s) explored:** Exploring and understanding the preference for rounded or sharp edges and specifically the reasoning behind the preference.

**Research question:** Will rounded or sharp corners be preferred? Why or why not?

#### 5.4.12. CONCEPT 12: Door swing, door hinge, door relationship and conflicting door

##### 1. Door swing

Participants had to choose between the door swinging towards the outside or towards the inside and indicate what and why they would select it. According to *feng shui*, door swing B should be preferred.

**Principle(s) explored:** Establishing the preference for door swing towards the inside or outside. Support for the door swing towards the inside when entering

a room would support the *feng shui* contention that design should support the ease of flow, compared to opening a door towards the outside which would create some discomfort.

**Research question:** Would the door swing towards the inside or the outside be preferred? Why or why not?

## 2. **Door hinge**

Participants had to choose between the door swinging towards the left or towards the right and indicate what and why they would select it. According to *feng shui*, door hinge A should be preferred.

**Principle(s) explored:** Again assessing the concept of the right hand bias (see paragraph 5.4.4); this time in the context of the door hinge. If the right hand bias is confirmed, the door opening towards the left would be disliked.

**Research question:** Which door hinge will be selected and why?

## 3. **Door relationship**

Four door relationship scenarios (piercing heart doors, centred doors, off-centred doors and unrelated doors) were presented to participants requesting them to indicate their opinion about each. According to *feng shui*, door relationship D should be preferred.

**Principle(s) explored:** In this concept it will be established what participants' perceptions are about the four door relationships as mentioned in the previous paragraph as well as whether they perceive any of the four to be better than the other. Different door relationships can arouse different feelings depending on how sensitive and observant participants are.

**Research question:** What will participants' perceptions regarding door relationships be?

## 4. **Conflicting doors**

Perceptions regarding the concept of conflicting doors were obtained. According to *feng shui*, all three options will create an uncomfortable feeling.

**Principle(s) explored:** Assessing whether doors which touch or can touch one another when opening are regarded as uncomfortable. This could be against the ease of flow and create discomfort.

**Research question:** What will participants' perceptions regarding conflicting door relationships be?

#### **5.4.13. CONCEPT 13: Corridor**

An illustration of a straight versus a meandering corridor was presented and participants were requested to indicate their preference on how both scenarios would make them feel. According to *feng shui*, option A should be preferred.

**Principle(s) explored:** Assessing perception regarding meandering vs. straight corridor. A meandering corridor could possibly seem to imitate nature and could therefore create a more comfortable feeling compared to a straight corridor which can possibly create a feeling which is perceived to be less comfortable.

**Research question:** Which corridor option would participants prefer and why?

#### **5.4.14. CONCEPT 14: View of slanted ceiling in relation to the self**

An illustration of a desk under the low end of a slanted roof was presented and participants were requested to indicate their feelings regarding the position. According to *feng shui*, participants should agree that sitting under the slanted ceiling should feel oppressive.

**Principle(s) explored:** Assessing perceptions and feelings a slanted ceiling in relation to the self elicits.

**Research question:** Will participants agree that sitting under a slanted ceiling will feel oppressive (as perceived by participants)?

#### **5.4.15. CONCEPT 15: Door wall**

There is a view that sitting outside the door (A) will make one feel excluded from the main activity. According to *feng shui*, people sitting outside the door wall (position A) should feel excluded.

**Principle(s) explored:** Assessing the perception that a person sitting outside what can be described as the door wall, would feel excluded from the main activity.

**Research question:** Will participants agree that sitting outside the door wall would make one feel excluded? Why or why not?

#### 5.4.16. CONCEPT 16: *Feng shui* assertions

The last section of the questionnaire consisted of a number of statements of *Feng shui* assertions where participants were asked directly whether they agreed or disagreed with the statement. This is in contrast with Concepts 1 to 15 where images were only presented with visual images without any background.

##### **There is a view that:**

- Sitting under a beam (with enough head space if you stand up) will feel oppressive and is not conducive to productivity. What is your opinion regarding this?

**Principle(s) explored:** Assessing the perception that sitting under a beam will make one feel oppressed which will have a negative impact on productivity.

**Research question:** Will sitting under a beam (with enough head space if you stand up) feel oppressive and not be conducive to productivity? Why or why not?

- Sharp corners in an office (like pillars, desks etc.) create negative energy. What is your opinion regarding this?

**Principle(s) explored:** Assessing the perception that sharp corners will have negative impact on occupants (see also 5.4.11).

**Research question:** Will sharp corners in the office be regarded as creating negative energy? Why or why not?

- Balancing light and dark colours, soft and hard surfaces and smooth and rough textures in your choice of window treatments, furniture and flooring is conducive to productivity. What is your opinion regarding this?

**Principle(s) explored:** Assessing the perception that balancing opposites may create a harmonious environment conducive to productivity.

**Research question:** Will the balancing of opposite elements be regarded as conducive to productivity? Why or why not?

- Clutter in an office creates negative energy. What is your opinion regarding this?

**Principle(s) explored:** Assessing the perception that clutter has a negative impact on occupants of an office space.

**Research question:** Will clutter in an office be regarded as creating negative energy? Why or why not?

- Keeping your back toward a corner or a wall for support is the best seating position. What is your opinion regarding this?

**Principle(s) explored:** Assessing the perception that having a solid support behind one's back would make one feel protected.

**Research question:** Will keeping your back toward a corner or a wall for support be regarded as the best seating position? Why or why not?

- Sitting in line with the office door is not conducive to productivity. What is your opinion regarding this?

**Principle(s) explored:** Assessing the perception that sitting in line with a door will be distracting and have a negative influence on productivity.

**Research question:** Will sitting in line with the office door be regarded as not conducive to productivity? Why or why not?

- Facing away from the door in an office puts you in a vulnerable position. What is your opinion regarding this?

**Principle(s) explored:** Assessing the perception that having one's back towards the door would make one feel vulnerable.

**Research question:** Will facing away from the door in an office put one in a vulnerable position? Why or why not?

- Looking straight out into a corridor or see the stairs, storage rooms, closets, elevators, escalators or toilets is not conducive to work performance. What is your opinion regarding this?

**Principle(s) explored:** Assessing the perception that facing or being near areas with high traffic or non-core uses such as storage rooms will be distracting and not conducive to work performance.

**Research question:** Will looking straight out into a corridor or see the stairs, storage rooms, closets, elevators, escalators or toilets not be conducive to work performance? Why or why not?

- Sitting in the corner furthest from the entrance to the room facing the door is the best seating position. What is your opinion regarding this?

**Principle(s) explored:** Assessing the perception that sitting in the corner furthest from the entrance to the room facing the door is the best seating position.

**Research question:** Will sitting in the corner furthest from the entrance to the room facing the door be the best seating position? Why or why not?

The completed interviewing schedule was piloted on one participant and the necessary adaptations were made. The complete guide is attached as Appendix A.

#### **5.4.17. INFORMATION PROCESSING AND ANALYSIS**

According to Spencer, Ritchie and O'Connor (2005, p. 200) there are no clearly agreed rules or procedures for analysing qualitative-descriptive information. Approaches to qualitative analysis differ according to epistemological assumptions, the main aims and the tradition followed (Spencer et al., 2005). According to Ritchie and Lewis (2005, pp. 200-201) the different traditions inter alia are:

1. **Ethnographic accounts:** describes and details the way of life of individuals or groups.
2. **Life histories:** focus is the life history of a person.
3. **Narrative analysis:** identifies the basic story which is being told according to the way it is constructed, the intention of the teller, the nature of the audience, the meaning of the story.
4. **Content analysis:** both context and content are analysed: themes are identified as well as the frequency of occurrence. The analysis is linked to variables such as gender.
5. **Conversation analysis:** focuses on the structure of conversation.
6. **Discourse analysis:** focuses on the use of language and discourse in society, events and psyche.
7. **Analytical induction:** builds explanations by constructing and assessing causal links.

The analytical methodology used in this study was **content** analysis. Qualitative content analysis can be defined as “*a research method for the subjective interpretation of content of text data through the systematic classification process of*

*coding and identifying themes or patterns*” (Hsieh & Shannon, 2005, p. 1278). In content analysis a consistent set of codes are used to designate information with similar content. One would typically count the frequencies of the codes to get a sense of the information gathered (Morgan, 1993). According to Hsieh and Shannon (2005) there are three types of qualitative content analysis:

1. **Conventional:** used when a study’s aim is to describe a phenomenon. It is appropriate when existing theory or research literature is limited. Open-ended questions and probes as well as no preconceived coding categories are used.
2. **Directed:** existing theory or prior research exists that is complete or would benefit from further description.
3. **Summative:** Identifies and quantifies certain words or content in a text with the purpose of understanding the contextual use of the words or content. The purpose of the quantification is to explore usage and not to infer meaning.

Content analysis is especially valuable when doing a comparative analysis e.g. comparing different samples, different subgroups etc. (Morgan, 1993). The results can be used in concept development or model building. The main advantage of this analysis methodology is that one gains direct insight from participants without imposing preconceived categories on the information. In this study **conventional content analysis** was used, as there is limited theory and literature available, and subgroups are being compared.

The following analysis process was followed (based on processes described by Hsieh & Shannon, 2005; Morgan, 1993):

**Input information:**

1. All interviews were recorded and transcribed for analysis.

**Create codes:**

2. Read transcripts repeatedly to get a feel for the information as a whole.
3. Highlighted words that capture concepts or thoughts as input into codes.
4. Made notes of first impressions and initial analysis.
5. Grouped key thoughts to form a coding scheme and sorted codes into meaningful clusters.
6. Described each category and code for reporting purposes.

**Frequency counts:**

7. Counted frequency of codes to assist in detecting patterns in the information as a guide for interpretation.
  - a. Meaning, not words, are identified
  - b. Interpret counts within a context and not in isolation.

## **5.5. ETHICAL CONSIDERATIONS**

The researcher is both a registered research psychologist as well as a SAMRA<sup>14</sup> Accredited Researcher (SAR) and is therefore bound by both the ethical code of the Health Professions Council of South Africa<sup>15</sup> as well as the ESOMAR<sup>16</sup> Code of Conduct<sup>17</sup> to which SAMRA subscribes.

Participation in the study was voluntary and participants were informed of their right to refuse answering any question or stop the interviewing process at any time. Participants were informed that the research is for study/academic purposes and that the purpose of the study is to find out what people thought of various design elements and how it made them feel.

Interviewees' permission to be tape recorded was obtained before interviewing and no personal information was audio-recorded (identification of recorded material was by means of a record number). All recorded information was transcribed and the original tapes were destroyed after the completion of the study.

Participants were ensured that their identity would be protected and at no point would their identity be revealed or their individual responses be connected to them. Only the researcher had access to the information.

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<sup>14</sup> Southern African Marketing Research Association

<sup>15</sup> Available at [www.hpcsa.co.za](http://www.hpcsa.co.za)

<sup>16</sup> European Society of Marketing Research

<sup>17</sup> Available at [www.esomar.org](http://www.esomar.org)



## 5.6. ISSUES OF TRUSTWORTHINESS

Horsburg, (2003) does not regard the quantitative conceptualisation of validity (does it measure what it is supposed to measure) and reliability (consistency between two measures) as suitable for the evaluation of qualitative research. Popay, Rogers and Williams (1998) describe **validity** in qualitative research as truthfulness of the findings and **reliability** as the stability of the findings. Davies and Dodds (2002) discuss the use of **rigor** to assess qualitative research. “*(R)igor, in a general sense, does not refer to the reliability and validity of research*” (Davies & Dodds, 2002, p. 280). They are of the opinion that rigor *inter alia* encompasses attentiveness, empathy, carefulness, sensitivity, respect, honesty, reflection, conscientiousness, engagement, awareness, openness and context. Whitemore, Chase and Mandle (2001) developed a framework to assess validity and reliability in qualitative research which encompasses the elements Davies and Dodd (2002) include in their description of rigor. The action standards of Whitemore et al. (2001) and evidence of these in this study are provided in Table 5.2 (differentiated between primary and secondary criteria).

**Table 5.2 Action standards and evidence in this study**

<b>Primary criteria</b>	<b>Action standard</b>	<b>Evidence in this study</b>
<b>Credibility</b>	Reflects the experience of the participants in a believable way.	Interviewers were selected for their extensive research and interviewing experience. Interviews were recorded and transcribed to stay true to what the participants reported. The full transcripts were used for the analysis to ensure that the analyses stayed true to the participants' responses.
<b>Authenticity</b>	Exhibit awareness to subtle differences in the voices of all participants.	Effort was made to capture the differences between groups and nuances within groups.
<b>Criticality</b>	Research process demonstrates evidence of critical appraisal.	The process was developed based on the student's research experience of 27 years, extensive literature review as well as two initial interviews as input in the development of the techniques and measuring instrument. The completed instrument was piloted on one respondent. This also enhanced content and construct validity.
<b>Integrity</b>	Research reflects recursive and repetitive checks of validity as well as humble representation of findings.	Regular checks based on literature were made. To ensure that results stayed true to the information no claims were made if not supported by the information. The coding schemes were developed based on the transcripts. Only the researcher developed the coding scheme, coded the themes and conducted the analysis. This enhanced internal consistency.

**Table 5.2 Action standards and evidence in this study (continued)**

<b>Secondary criteria</b>	<b>Action standard</b>	<b>Evidence in this study</b>
<b>Explicitness</b>	Methodological decisions, interpretations and investigator biases have been addressed.	The basis of methodology was described as well as justified from literature. Investigator biases were minimised by e.g., using independent interviewers.
<b>Vividness</b>	Thick and faithful descriptions have been portrayed with artfulness and clarity.	Themes are described in detail and quotes are provided to support and explicate themes in the analysis.
<b>Creativity</b>	Imaginative ways of organizing, presenting and analysing information have been incorporated.	Effort was made to design the picture/visual components to be as near as possible to real-life situations.
<b>Thoroughness</b>	The findings convincingly address the questions posed through completeness and saturation.	Every attempt was made to address the research questions fully, completely and in-depth.
<b>Congruence</b>	The process and findings are congruent. Sensitivity: the investigation has been implemented in a way sensitive to the nature of human, cultural and social contexts.	There was a golden thread from the research questions, selection of methodology, research instrument and analysis methodology. The research has been implemented attempting to be sensitive to participants; their cultural and social contexts.

## 5.7. SUMMARY

A qualitative-descriptive approach was followed based on conducting in-depth interviews with a stratified purposive judgement sample of 25 participants. The sample was stratified according to age, gender and population group. An obtrusive interviewing methodology was followed, where participants knew that they were researched. Interviews were conducted by three experienced and knowledgeable qualitative interviewers. All interviews were audio-recorded and transcribed. Conventional content analysis was used in information analysis.

## Chapter 6

### 6. RESULTS

*"It takes a lot of imagination to be realistic, because reality is so much more than we imagine."*  
ascribed to/inspired by **Alpha Dog Lo**

#### 6.1. GENERAL COMMENTS

In the analysis that follows a content analytic approach consisting of a combination of quantitative descriptive analyses along with qualitative narrative analyses was followed. In all instances where participants were required to select a preference for a setup, design or layout, it will be quantified and compared between the subgroups. Where participants were required to describe their feelings or associations, the most themes with the corresponding frequencies mentioned most often will be reported on. In the latter instance the comparison between the subgroups will be based on an analysis of the responses and not on the frequency thereof. At the end of a concept implications of the results are provided as applicable to this specific research group.

Some participants were less inclined towards abstract thought and had difficulty answering some questions. This was more evident in sections such as Concept 1 (the five elements) and the last section about the *feng shui* theories. Varying per question, up to eight participants could not answer a specific question. One participant in particular had trouble answering a number of the questions. Where frequencies are provided, the non-responses are indicated.

At the beginning of each concept, the question(s) asked, the principle measured, as well as the visual image (where applicable) are provided for ease of reference. As mentioned in Chapter 5, wherever there is a reference to "white" it also includes "coloured".

## 6.2. CONCEPT 1: ASSOCIATIONS WITH WATER, WOOD, EARTH, METAL AND FIRE

**Principle measured:** Understanding the associations symbolising the various elements in the context of design. How these associations and symbolism could be translated into design elements to visually communicate values and visions as well as to create ambience.

**Questions (asked for each element):**

- What do you associate with each of the following elements? Water, Wood, Earth, Metal, Fire
- How would you translate this element into a design element at work? **PROBE:** colour, material, nature. **PROBE:** for: walls, floors, ceiling, furniture
- With what industry do you associate each element (more than one element per industry is possible)? **INTERVIEWER:** Can probe for colour, texture, symbolism.
  - What do you associate with government? Why?
  - Advertising agency? Why?
  - Attorneys? Why?
  - Fast food outlet? Why?
  - Modern fusion restaurant? Why?
  - Pub/tavern? Why?
  - Which element do you associate with an industry where things need to happen quickly – i.e. where high energy is needed?

The large amount of information generated by the above questions will be reported on under the following headings:

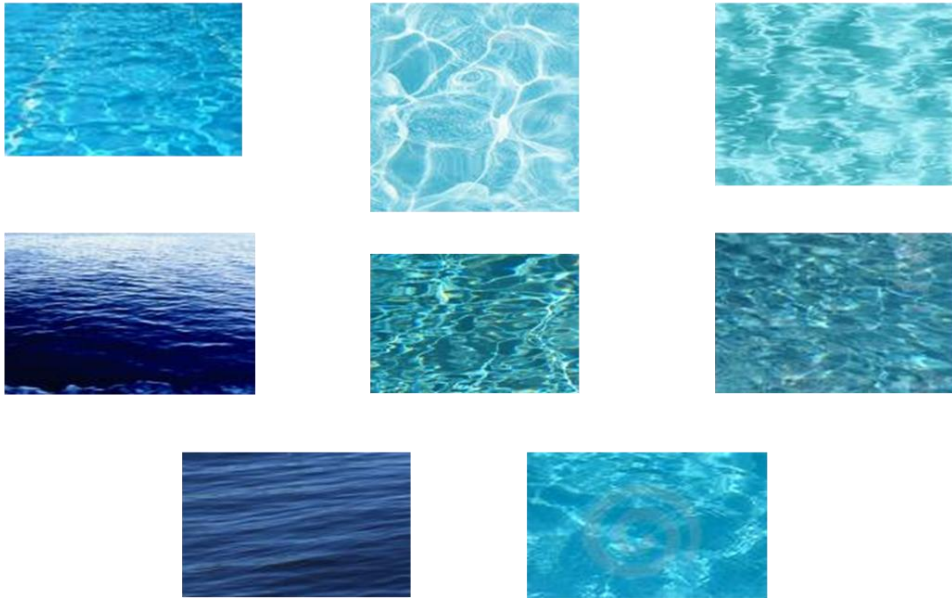
- Associations with the element
- Elements or objects symbolising the element
- Materials representing the element
- Colours associated with the element

The five elements are very important as design building blocks. The participants were asked a variety of questions for each of the elements, including how the design element can be expressed in the built environment. Participants who were more

inclined towards concrete thinking struggled to translate the abstract concepts into sensible answers and are therefore discussed in-depth.

### 6.2.1. Water

# Water



#### **Associations with water:**

The associations with water are by far the most positive and elicited only three negative responses namely that it is associated with the *unknown*, the *deep* and that it is *scary*. On an emotional level water was mostly associated with *calmness and tranquillity* (n=26), *survival* (including drinking water, abundance and therefore life) (n=12) and *cooling and refreshing* (n=9). Fourteen participants associated water with *water objects/bodies* such as the sea, swimming pool, fountains and fish, and four with the *summer* or *outdoors*. Only one participant could not associate anything with water.

**Elements or objects symbolising water:**

According to the participants images and representations of water such as the *water features* (n=22) (for example fountains and fish ponds) and paintings symbolising water (*ocean/sea*, n=9 and *swimming pools*, n=5).

**Materials representing water:**

The materials which can be used to represent water can be any *transparent* materials (n=5) or specifically *glass* (n=10) (e.g. glass coffee table, glass bricks), shiny *ceramic* or *crystal clear tiles* (n=3) or *marble* (n=1).

**Colours associated with water:**

As could have been expected, blue and shades of blue are most associated with water.

- **Variations of blue shades** (n=32)  
Blue (n=17), light sky blue/light blue (n=4), sky blue (n=3), sea blue (n=2), deep blue (n=2), water colours (n=2), sparkling blue (n=1), spirit blue (n=1).  
One participant mentioned that care should be taken not to use too much blue – it can look cold.
- **Natural cream/white/grey** (n=5)  
Cream (n=2), white (n=2), grey (n=1)
- **Clear water colour** (n=4)  
Crystal (n=1), crystal clear (n=2), clear water colour (n=1)
- **Green** (n=2)  
Light green (n=1), bottle green (n=1)
- **Purple** (n=1)

## 6.2.2. Wood

# Wood



### **Associations with wood:**

Only three remarks which could be seen as negative were made, namely that wood is associated with being *old fashioned*, *coffins* and that it can be destroyed by *fire*. It is mostly associated with *man-made objects* such as doors, furniture, cupboards, desks and ceilings (n=22). Minor mentions were *buildings*, houses, office/office blocks (n=4) and *art* (art deco and sculptures) (n=2). Only three participants associated wood with natural elements such as *trees* or *nature*. On an emotional level wood is associated with *stability*, *beauty*, *strength* and *warmth* (n=5), as well as *elegance*, *luxury* and *sophistication*, *status symbol*, *harmony* and *strength* (mentioned by one participant for each).

### **Elements or objects symbolising wood:**

The elements or objects symbolising wood were *wooden furniture* (n=38) (including general wooden furniture, n=21, tables/desks, n=7, office furniture and chairs, n=6 and cupboards, shelves, chest of drawers, one each); *floors* (n=13), *doors* (n=3), *ceilings* (n=3), *walls* (n=2), *art works* such as statues (n=3), and *trees* (n=2).



### **Materials representing wood:**

Materials which can be used to represent wood in design are real *wood* (n=25) used in furniture, floors, walls or ceilings. Also pine wood wall coverings, wood divisions for walls or wood-like material can for example be used: “*old style, but look new as in lamination*” (b, f, y)<sup>18</sup>. Two participants could not mention any material representing wood.

### **Colours associated with wood:**

Browns and wooden colours were most often associated with the element wood.

- **Browns and wooden colours** (n=16)  
Dark brown (n=5), brown (n=5), light brown, (n=3), earthy brown (n=1), mahogany (n=1), teak (n=1)
- **Wooden colours** (n=6)
- **Creams** (n=2)
- **Soil colour** (n=1)
- **Maroon** (n=1)
- **Emerald green** (n=1)

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<sup>18</sup> w=white, b=black, c=coloured; f=female, m=male; y=<35 years, o=35+ years

### 6.2.3. Earth

# Earth



#### **Associations with earth:**

Nothing negative was associated with the element “*earth*” but one participant did express concern about earth’s “*shocking resources, earth screams*” (w, f, o). Only one participant could not associate anything with earth and only four participants associated earth with man-made objects, namely carpets (n=2), buildings and electricity. Associations with natural elements (n=30) were by far mentioned most often with *soil, sand, gravel, desert* and *rocks* (n=12) mentioned most often and *plants, trees* and *forests* (n=7) the second most. “*Sea*” was mentioned by two participants. On an emotional level earth is associated with a *nurturing, calming, familiar* and *grounded* feeling (n=10).

#### **Elements or objects symbolising earth:**

The elements associated with earth are *plants/pot plants/atriums* (n=16), *windows with a natural vista* and *art* (e.g. earth photography, mountain art, sculptures, n=4), *office furniture* and *carpets* (e.g. cupboards, desks n=5) made from natural materials; and *soil* used in for example wall *plaster* (n=2). Only one person was not able to mention anything.

**Materials representing earth:**

Seven participants could not mention any material representing earth. **Materials** which could be used to represent the earth element are whatever occurs in nature e.g., plants (n=6), colour (n=5), any natural material such as clay, sisal, clay bricks and clay ornaments (n=4), vases, soil in pot plants, plastered walls, ceilings and ceramic tiled floors to create an earthy look and sand flooring (one each).

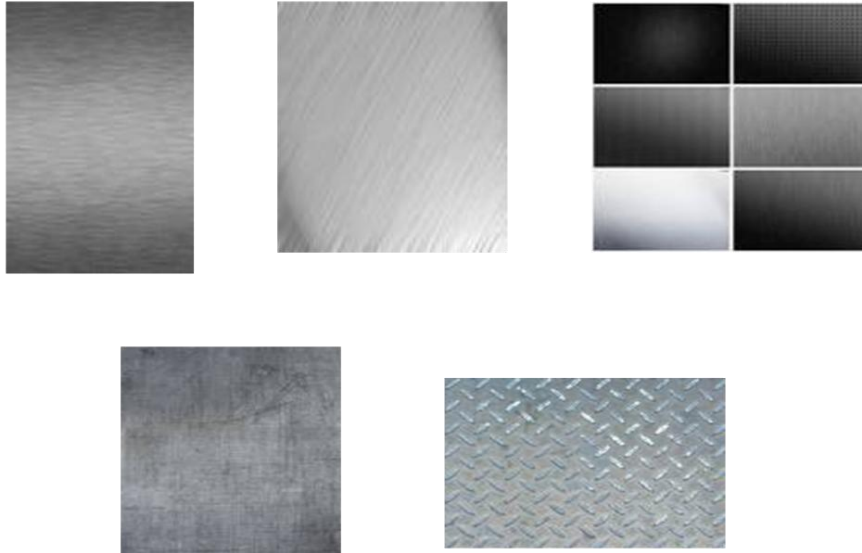
**Colours associated with earth:**

Earthy and brown colours were most often associated with the earth element.

- **Earth/soil/fawn colours** (n=11)
- **Brown** (n=9)  
Brown, brownish (n=6), dull brown (n=1), light brown (n=1), rusty browns (n=1)
- **Natural/neutral colours** (n=4)
- **Cream** (n=1)
- **White** (n=1)
- **Khaki** (n=1)
- **A warm colour** (n=1)

#### 6.2.4. Metal

# Metal



#### **Associations with metal:**

Metal elicited the second most negative responses (n=12) (second only to fire). It is seen as *clinical*, *cold* and *impersonal* (n=6); *hard* (n=2) and also associated with being *crushed*, a *danger zone*, *lack of communication* and a *negative attitude* (n=4). As could be expected, metal was most often associated with *man-made objects*, either metal objects for general use (n=14) such as cars, shelves, garage doors/doors, cabinets, furniture, jewellery, or for *industrial use* (n=12) such as Mittal, mining, construction, structures, machinery, frames, lights and street poles (n=5). Metal is also symbolised by *durability*, *modernity*, *upper market*, *shininess*, *flexibility* (in the sense that it can be shaped into a new form) and *intellect*.

### **Elements or objects symbolising metal:**

Elements and objects which can be used to symbolise the metal element are anything made from metal. Seven participants could not think of any element or object symbolising metal in an office context. Metal is preferred to be used as an accent: *frames* (picture, door, atrium, table or stands n=8), *any metal* object (n=6), *equipment/computers* (n=2), *metal lighting* (n=2), *mirrors* (n=1) *metal furniture* such as pub tables and chairs, foot stool, CD holder, coffee table, steel tables, stands, suit and jacket stand, bookcases (one each), *file boxes/filing cabinets* (n=2) and decorative elements such as *sculptures* (n=1), interior and exterior *staircases* (n=1).

“Daar moet ‘n element van metaal wees ... definitief om ‘n “office environment” bietjie meer professioneel te laat lyk. Daar moet ‘n element van metaal wees, maar nie te veel nie, nie te min nie.” (w, m, y)

### **Materials representing metal:**

Materials which can be used to represent the metal element are *any metal* such as steel (n=3), zinc (n=2), chrome (n=1) and metal-looking material (e.g. ceramic tiles; n=2). Participants further mentioned typical metal objects as reported in the previous paragraph.

### **Colours associated with metal:**

- **Steel grey, steel, grey, metal colour** (n=9)
- **Silver** (n=8)
- **Black** (n=4)
- **Whitish** (n=1)
- **Maroon** (n=1)
- **Wood and steel mixture** (n=1)

### 6.2.5. Fire

# Fire



#### **Associations with fire:**

Fire elicited the most negative responses (n=21), namely *danger* in general (n=6) (e.g. a hazard) or a specific danger (n=6) (e.g. a volcano), *work related* (n=6) (work not well done, unpleasant environment, authority and autocratic boss, “*my boss’s temper*” [w, f, y], poor communication, meetings) and lastly *burning or veld fires* (n=3). *Heat* and *energy giving* properties (n=10) were second most often associated with fire: heat/heater/(fire) hearth (n=5), followed by explosions (n=2), blasting for mining and combustion), electricity, energy charge and manufacturing of petroleum (one each). It was also associated with strong emotions, passion, “*aliveness*” (b, f, o), “*energy*” (w, f, o), “*creativity, inspiring, hard-working, right brain*” (w, f, o), “*motivation, a means of positiveness*” (c, f, o). Two participants could not associate fire with anything.

#### **Elements or objects symbolising fire:**

Participants had difficulty associating fire with elements or objects which can be used in the office environment. The few elements or objects mentioned were a fireplace, wood, lighting and electrical cables. It was easier for participants to associate fire with colours, such as red or orange.

### Materials representing fire:

The nearest to materials the participants could mention were pictures resembling fire and ceramic tiles. Again, colours were more generally mentioned.

### Colours associated with fire:

- **Red** (n=11)
- **Orange** (n=7)
- **Brown** (n=5)
- **Yellowish/gold** (n=4)

### 6.2.6. Association with various industries

Understanding the underlying associations with each industry in terms of the five elements, will assist in giving guidelines for aligning the elements with industry and work spaces. Participants approached the questions from two angles 1) the **perception** of the characteristics of the industry, and 2) the **symbolic** aspects associated with the element.

**Table 6.1 Industry association with elements**

Element	Government	Advertising agency	Attorneys	Fast food outlet	Fusion restaurant	Pub/tavern	High energy industry
	<b>n</b>						
<b>Water</b>	2	8	-	4	4	1	2
<b>Wood</b>	5	1	11	3	4	16	-
<b>Earth</b>	10	2	2	1	4	1	1
<b>Metal</b>	10	5	8	6	13	-	5
<b>Fire</b>	3	8	5	10	6	8	17

#### 1. Government

Government is mainly associated with *metal* (n=10) and *earth* (n=10). The association with **metal** is mainly because government is seen as cold, “*tough to get through*” (w, f, y), “*difficult to change*”(c, f, o) – metal keeps its shape and is therefore inflexible, it is lifeless and cold, impersonal and has a hard attitude: “*they’re still narrow-minded, don’t want change, strong in their beliefs, in their setting, leave us alone, you know*” (c, f, o).

The **earth** association is because government is bland and dull, employees are grounded people and the buildings reminded one participant of the earth:

*“...they’ve got all these old rustic buildings that’s brownish in colour. It makes you think of sand or sandstone.”* (w, f, y)

Government is also positively associated with helping earth by one participant *“global warming, care for our future, ... they pay attention.”* (b, f, o).

## 2. Advertising Agency

Fire (n=8), water (n=8) and metal (n=5) were most often associated with advertising agencies. **Fire** was associated with being alive or lively, vibrant, not soft, in your face, quick, fiery, viby, bright and emotional (*“crazy”*) people with tantrums. **Water** was associated with being easy-going, soft, flowing, fancy, unique, and creative; the blue indicated positiveness and predictability: *“because water’s flowing, water can be predictable ... they were comfortable in their comfort zone”* (c, f, o). **Metal** is associated with modernity, being professional, materialism, technology, office design and *“rough edges”*.

## 3. Attorneys

Attorneys were mostly associated with wood, metal (both n=8) and fire (n=5). **Wood** is associated with the wooden furniture in the offices, stability, elegance, heritage and law books. The participants described two types of wood, old cracked wood can be morbid, but modern wood can be inspiring and one can decide which one of the two one wants to portray. **Metal** is associated with being clinical, factual, hard, strong, cold and *“not really ethical”* (w, f, o). The third element, **fire** is associated with danger, destroying people, fighting and unscrupulousness.

## 4. Fast food outlet

Fire (n=10) and metal (n=6) are most often associated with fast food outlets. The **fire** element is associated with the grills and ovens as well as the colour red. **Metal** is associated with hygiene, practicality, metal containers, being impersonal and quick turnover (*“in and out, you do not want to linger”*, w, f, o).



### **5. Modern fusion restaurant**

**Metal** (n=13) is by far the element most associated with modern fusion restaurants. The reasons given were mainly that it is modern, fashionable, new look, clean and that it has chrome or delicate metallic furniture and it represents nice design elements.

### **6. Pub/tavern**

**Wood** (n=16) is overwhelmingly associated with pubs or taverns. Wood is first of all associated with the typical wooden furniture of an English or Irish pub. It is also associated with being sociable, warmth, warm furnishings, cosiness, homeliness and an old rustic feeling.

### **7. Industries where things need to happen quickly**

**Fire** (n=17) is associated most with a fast-moving industry. When there is fire one must act quickly, it creates energy and is also associated with passion.

### 6.3. CONCEPT 2: LOCATION

**Principle measured:**

The perception that the layout as it was illustrated would put the occupant in a commanding position by protecting the back and sides and having a full view of the front. It will also assess the applicability of prospect-refuge theory in this layout.

**Questions:** There is a claim that when facing a building,

- whatever lies in **front** of a building should ideally be **low** so that the entry to the building is easily visible, attractive and welcoming.
- on the **right** hand side ideally you would have a building, fence or vegetation slightly **taller** than the building.
- on the **left** hand side ideally you would have a building, fence or vegetation **lower** than the building.
- at the **back**, you would ideally have a building, fence or vegetation **taller** than your home and even taller than the building on the right hand side.

What do you think of this? What do you think this symbolises?



Most participants (n=14) could not see any symbolism in this and tried to make sense of the drawing by trying to work out the type of buildings or just describing what they saw. Especially male participants became very structured and descriptive. Some felt that one cannot dictate the setting – the environment is a given – “*it just happens, you can’t plan it*” (w, m, y).

At most some found a balance in the depiction:

- “Looks *nice and in place.*” (b, f, y)
- “*It works, never thought of it that way, easy on the eye.*” (b, f, o)
- “*Balance.*” (w, f, o)
- “*The eye must be led from left to right.*” (w, m, o)

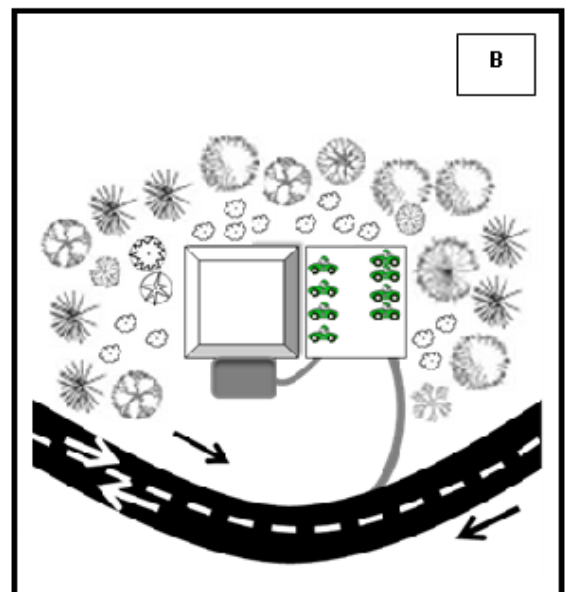
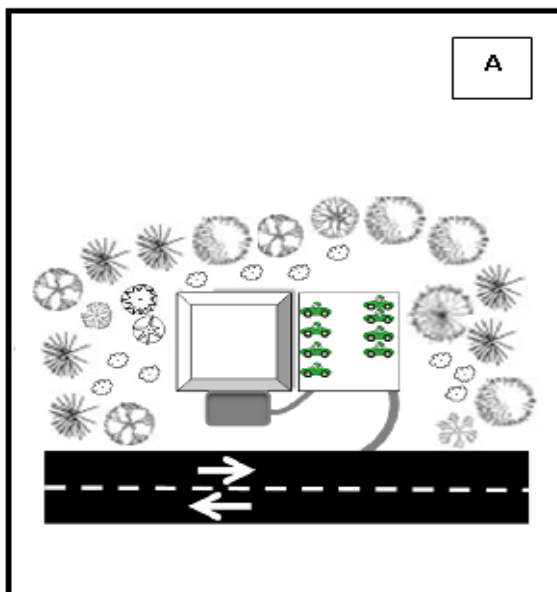
- “I would expect the inside to be just as orderly as it looks outside. Yeah, order.” (c, f, o)

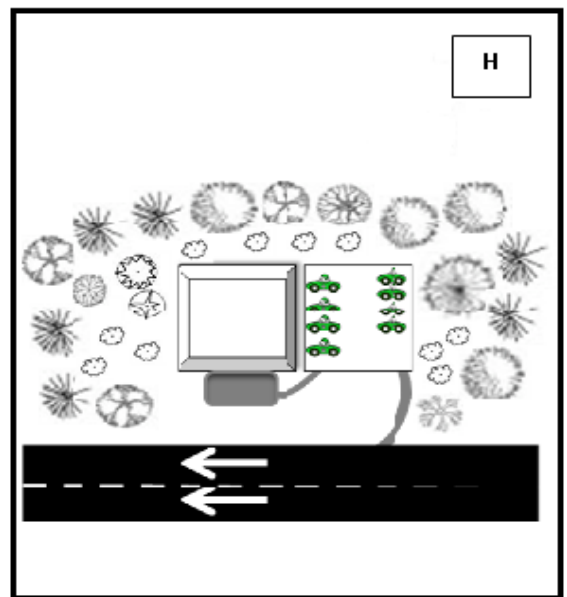
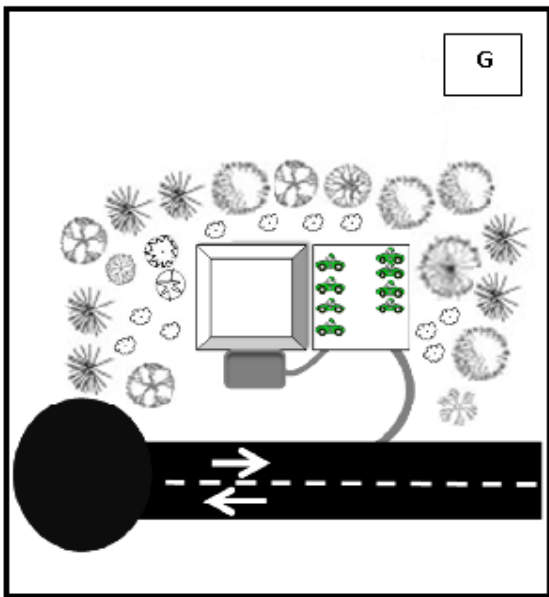
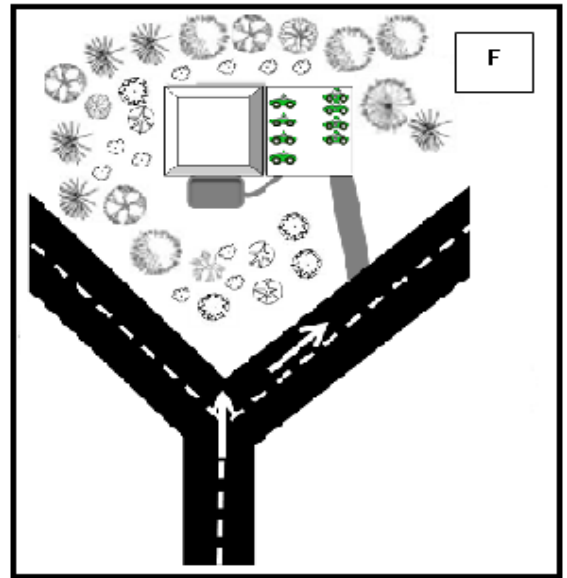
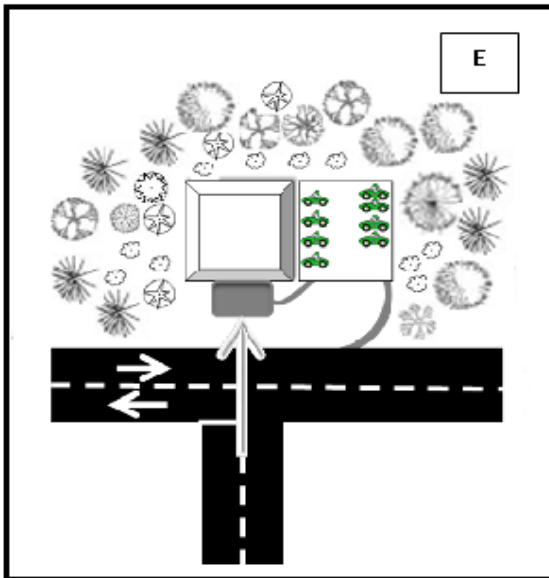
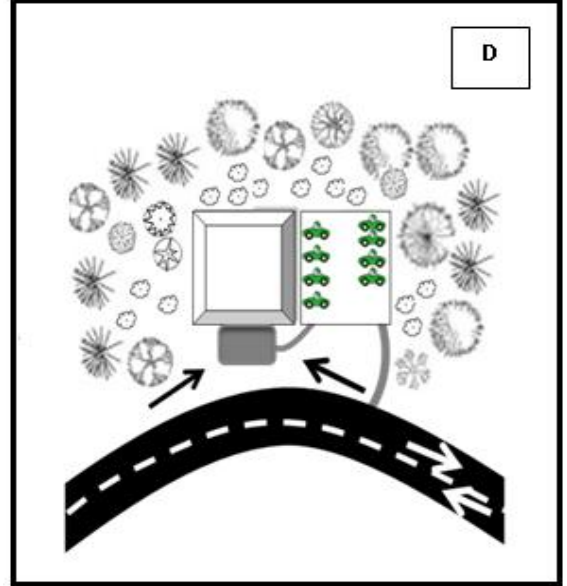
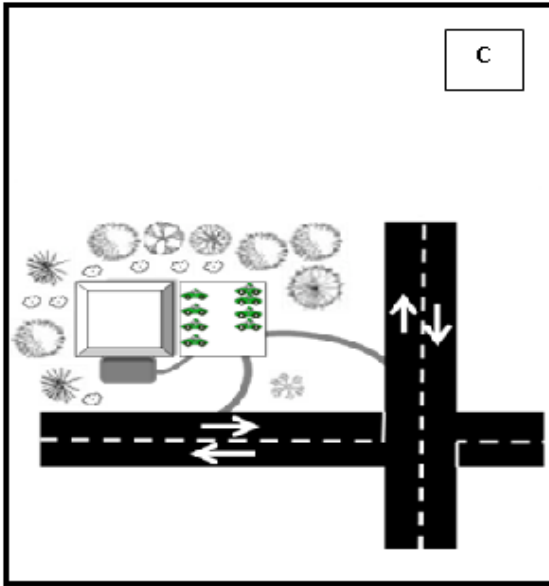
One participant found it visually unappealing and only two participants could think of any symbolism, namely “it symbolises hierarchy in an organisation” (w, f, y) and “symbolises – law”, “weegskaal” (w, f, o).

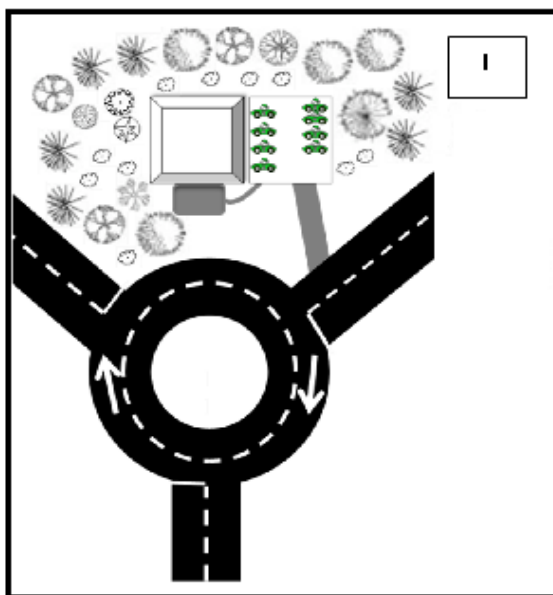
#### 6.4. CONCEPT 3: ROADS

**Principle measured:** Perceptions of various road layouts in relation to participants in terms of ease of access, safe access, noise and a general feeling of comfort are established.

**Questions:** Some of the following locations can be regarded as better and others as worse positions. Which would you regard as better and which ones as worse, or does it not matter to you. Why?







**Table 6.2 Road layout preferences**

		All	Black	White/ Coloured	Male	Female	Young	Old
		n	n	n	n	n	n	n
<b>Design A</b>	<b>Like</b>	15	9	6	5	10	6	9
	<b>Dislike</b>	4	-	4	2	2	2	2
	<b>Neither/nor</b>	6	1	5	2	4	3	3
<b>Design B</b>	<b>Like</b>	4	-	4	1	3	1	3
	<b>Dislike</b>	14	7	7	4	10	8	6
	<b>Neither/nor</b>	7	3	4	4	3	2	5
<b>Design C</b>	<b>Like</b>	14	8	6	5	9	10	4
	<b>Dislike</b>	6	1	5	2	4	-	6
	<b>Neither/nor</b>	5	1	4	2	3	1	4
<b>Design D</b>	<b>Like</b>	1	1		-	1	1	
	<b>Dislike</b>	15	7	8	6	9	8	7
	<b>Neither/nor</b>	9	2	7	3	6	2	7
<b>Design E</b>	<b>Like</b>	9	5	4	4	5	5	4
	<b>Dislike</b>	12	5	7	4	8	4	8
	<b>Neither/nor</b>	4	-	4	1	3	2	2
<b>Design F</b>	<b>Like</b>	6	2	4	1	5	2	4
	<b>Dislike</b>	13	7	6	6	7	7	6
	<b>Neither/nor</b>	6	1	5	2	4	2	4
<b>Design G</b>	<b>Like</b>	13	6	7	5	8	7	6
	<b>Dislike</b>	6	4	2	3	3	1	5
	<b>Neither/nor</b>	6	-	6	1	5	2	4
<b>Design H</b>	<b>Like</b>	6	4	2	3	3	2	4
	<b>Dislike</b>	13	5	8	3	10	6	7
	<b>Neither/nor</b>	6	1	5	3	3	3	3
<b>Design I</b>	<b>Like</b>	8	5	3	2	6	5	3
	<b>Dislike</b>	10	3	7	4	6	4	6
	<b>Neither/nor</b>	7	2	5	3	4	2	5

**Table 6.2 Road layout preferences (Continued)**

		All	Black	White/ Coloured	Male	Female	Young	Old
		25	10	15	9	16	11	14
		%	%	%	%	%	%	%
<b>Design A</b>	<b>Like</b>	60	90	40	55.6	62.5	54.5	64.3
	<b>Dislike</b>	16	-	26.7	22.2	12.5	18.2	14.3
	<b>Neither/nor</b>	24	10	33.3	22.2	25	27.3	21.4
<b>Design B</b>	<b>Like</b>	16	-	26.7	11.1	18.8	9.1	21.4
	<b>Dislike</b>	56	70	46.7	44.4	62.5	72.7	42.9
	<b>Neither/nor</b>	28	30	26.7	44.4	18.8	18.2	35.7
<b>Design C</b>	<b>Like</b>	56	80	40	55.6	56.3	90.9	28.6
	<b>Dislike</b>	24	10	33.3	22.2	25	-	42.9
	<b>Neither/nor</b>	20	10	26.7	22.2	18.8	9.1	28.6
<b>Design D</b>	<b>Like</b>	4	10	-	-	6.3	9.1	-
	<b>Dislike</b>	60	70	53.3	66.7	56.3	72.7	50
	<b>Neither/nor</b>	36	20	46.7	33.3	37.5	18.2	50
<b>Design E</b>	<b>Like</b>	36	50	26.7	44.4	31.3	45.5	28.6
	<b>Dislike</b>	48	50	46.7	44.4	50	36.4	57.1
	<b>Neither/nor</b>	16	-	26.7	11.1	18.8	18.2	14.3
<b>Design F</b>	<b>Like</b>	24	20	26.7	11.1	31.3	18.2	28.6
	<b>Dislike</b>	52	70	40	66.7	43.8	63.6	42.9
	<b>Neither/nor</b>	24	10	33.3	22.2	25	18.2	28.6
<b>Design G</b>	<b>Like</b>	52	60	46.7	55.6	50	63.6	42.9
	<b>Dislike</b>	24	40	13.3	33.3	18.8	9.1	35.7
	<b>Neither/nor</b>	24	-	40	11.1	31.3	18.2	28.6
<b>Design H</b>	<b>Like</b>	24	40	13.3	33.3	18.8	18.2	28.6
	<b>Dislike</b>	52	50	53.3	33.3	62.5	54.5	50
	<b>Neither/nor</b>	24	10	33.3	33.3	18.8	27.3	21.4
<b>Design I</b>	<b>Like</b>	32	50	20	22.2	37.5	45.5	21.4
	<b>Dislike</b>	40	30	46.7	44.4	37.5	36.4	42.9
	<b>Neither/nor</b>	28	20	33.3	33.3	25	18.2	35.7

**Design A (office building next to a two way street):** More than 50 percent of all the groups **liked** the layout with the exception of the White/Coloured group where 40 percent indicated that they like it and 33.3 percent felt indifferent about it.

**Design B (road curves away from the building):** The largest percentage **disliked** the layout, with the Black (70 percent), female (62.5 percent) and young (72.2 percent) groups more fixed about this. There was less consensus among the White/Coloured, male and older groups (46.7 percent, 44.4 percent, 42.9 percent respectively disliked the design).

**Design C (corner stand):** More than 50 percent of the Black, male, female and young groups **liked** the layout with 40 percent White/Coloured participants who liked it and 33.3 percent who disliked it. Older participants did not like design C (dislike 42.9 percent, like and indifferent 28.6 percent each).

**Design D (road curves towards building):** Fifty percent or more of all groups **disliked** the layout.

**Design E (T-junction):** Overall, the majority of the participants **disliked** the layout, but with **little consensus** between and within groups. Fifty percent of Blacks and females liked design E and 50 percent disliked it, 57.1 percent of older participants, 46.7 percent of White/Coloureds and 44.4 percent of males disliked it. An equal number (44.4 percent) of males liked and disliked and 45.5 percent of younger participants liked design E.

**Design F (Y-junction):** More than 50 percent of Black, male and young groups **disliked** the layout. The dislike level for the other three groups was in the 40 percent range: White/Coloureds 40 percent (indifferent 33.3 percent), females 43.8 percent (like 31.3 percent), and older participants 42.9 percent (like and indifferent 28.9 percent each).

**Design G (dead-end):** Fifty percent or more of all groups **liked** the layout, with 46.7 percent of the White/Coloured group (40 percent indifferent) and 42.9 percent of the older group (35.7 percent disliked).

**Design H (one-way):** Fifty percent or more of all groups, except males, **disliked** the layout. An equal percentage of males (33.3 percent) liked, disliked or felt indifferent about design H.

**Design I (traffic circle/roundabout):** This diagramme is again **controversial** with not much consensus within and between groups. Overall the layout is **disliked**. More Black (50 percent) and young (like 45.5 percent, dislike 36.4 percent) participants indicated that they liked the design. White/Coloured (46.7 percent), male (44.4 percent) and older (42.9 percent) participants disliked the layout. An equal percentage of females liked and disliked the layout (37.5 percent each).

To summarise, the two designs which were liked by all groups were layouts A and G; layout C was liked by all except the young group; layouts B, D and F were disliked by all and there was little consensus regarding layouts E and I, although overall both were disliked.

In order to get a better understanding why participants like or disliked a layout, the reasons are discussed next.

### **Road Design A (office building next to two way street)**

The majority had a **positive** perception of the road layout in Road Design A.

The positive aspects regarding the layout were:

- It is straight and simple (this is associated with fewer accidents, curves are associated with more accidents): “... *better as straight, simple, no curves as in B, curves are dangerous and one needs to be careful when driving.*” (b, f, y).
- It will be easy to join the street, easily accessible from the street: “... *easy to join from work straight into a straight forward street.*” (b, f, y).
- Because of the straight street, visibility is unobstructed and one can easily see danger ahead: “... *the driver would immediately know where to turn off and go into the building. Yeah, it’s on the same side, it’s not difficult really.*” (c, f, o).
- Noise levels will be lower as the building is not too near to the road and plants will dampen the noise.
- It is out of the way – one can stay anonymous and will not attract attention.

The negative aspects regarding the road layout mentioned were:

- The straight road would encourage speed and it can be dangerous (especially in a residential area with many pedestrians): “... *encourages speed thus danger.*” (b, m, o).
- The building space is cramped.
- Entering the parking when driving on the other side of the road can be problematic “... *it’s perhaps on this side and they have to make a U-turn and so forth.*” (c, f, o).

One participant felt that whether it is good or bad will depend on the type of business: “*It depends on the nature of business, if it was garage/filling station, A would be ideal ....*” (b, m, y).



### **Road Design B (road curves away from building)**

The majority of the participants **disliked** Road Design B, mainly because of the curve in the road which is regarded as dangerous.

The reasons why participants disliked the road layout were:

- The curve will be dangerous and cause dangerous traffic situations:
  - *“Karre gaan op jou afpyl.”* (w, m, o)
  - *“Direction is fine, shape is a problem.”* (w, m, o)
  - *“Because the driver will have to go somehow around the building to get into the building, the road. That’s (the curve) also another problem. It’s prone to problems, traffic problems I would say, because the road is bent.”* (c, f, o)
  - *“The curvy point of view as cause danger to those using this road from this company.”* (b, f, y)
  - *“Entrance not visible, bend in the road, westerly direction cannot see cars coming.”* (b, f, y)

The positive aspects regarding the layout were:

- The building is further from the road and therefore there is more space: *“... space, not directly on the road, quieter.”* (w, m, y).
- The road curves away from the building.
- Motorists will drive slower because of the curve in the road: *“... safe for speed as (the road) curves.”* (b, m, o).

### **Road Design C (corner stand)**

The majority of the participants perceived Road Design C as **positive**. The main reasons why participants liked the design were:

- It is simple and safe.
  - *“The road is straight and simple”, “simple, just straight, safety.”* (b, f, y)
  - *“Much better as can see oncoming traffic.”* (b, m, o)
- It is more accessible for traffic with two possible entrances.
  - *“When you have to enter the building you can either come from this area, from the left and there’s a turn into the building, or you can do it on this road.”* (c, f, o)

- *“There are two different exits and entrances and it crosses two different roads. So depending on which way you’re going, it might be easier for you to get in and out.”* (w, f, y)

Negative responses revolved around the amount of traffic and the accompanied noisiness: “... *horrific, terrible – traffic all day through*” (w, f, o) and one mention of the risk of high speed: “... *would encourage speed humps to reduce speed, if it is a busy road.*” (b, m, o).

### **Road Design D (road curves towards building)**

The vast majority of the participants **disliked** Road Design D, again as in design B, mainly because of the curve in the road which is regarded as dangerous. The traffic coming towards the building will result in noise and the curve has a cramming effect. Some reasons for disliking Road Design D were:

- It is dangerous.
  - *“... it’s curvy, much riskier as one cannot see a pedestrian if coming on high speed, accidents are easy to make on curvy roads.”* (b, f, y)
  - *“... dangerous because of the curve, cannot see oncoming traffic.”* (w, m, o); *“... dangerous, blind spots, cannot see the cars.”* (w, f, o)
  - *“Oh no, D is out. It’s worse. Just the structure, not the structure of the building, but the corner, the situation or the decisions that you have to make there. And you don’t have much of a decision. No, no, no.”* (c, f, o)
- It feels cramped.
  - *“... next to the bend and not safe and too close to the company and not enough space between road and company.”* (b, m, y)
  - *“Looks too cramped. It might cause a few more accidents if the people come around the corner too fast, so that could be a potential risk for security people or gardeners working by the office block. So that’s potentially not such a safe option.”* (w, f, y)
- It can be noisy.
  - *“... verkeer kom na die gebou toe, geraas-impak.”* (w, f, o)

One person felt that this was the third best option after designs C and A.

### Road Design E (T-junction)

Road Design E elicited mixed reactions, but overall with more **negative** than positive responses. The negative remarks mostly revolved around danger:

- “... gaan in die gebou injaag, stop-impak.” (w, f, o)
- “... you would have to cross that intersection and then almost immediately start to go into the office block, so that could also be a potential traffic problem.” (w, f, y)
- “Voel bedreigd, forseer dit op jou.” (w, m, y)
- “A T-junction. People will drive right into the building.” (c, f, o)

The positive remarks were that:

- The building was more visible.
- One had options: “... have a chance to turn left or right without being disturbed.” (b, f, y).
- High visibility the building is easy to see and road it is straight and safe.
  - “Straight and safe from accidents.” (b, m, y)
  - “Easy and able to see where heading to.” (b, m, o)

### Road Design F (Y-junction)

The vast majority of the participants **disliked** Road Design F, mainly because of safety, convenience and direction issues:

- The layout is unsafe.
  - “Y-junction not safe from cars and traffic, thus easy accident occurrence.” (b, m, y)
  - “Traffic in one-way, you can turn the wrong way.” (w, m, o)
  - “Blind-spot haven.” (w, f, o)
- Giving directions can be problematic: “Y-shaped road difficult for giving direction, could get lost.” (b, f, y).
- It can be inconvenient for traffic from the left side.
  - It can make you feel closed off: “The one’s I don’t like at all are F and I. Because they just look too closed, like they are closing you off.” (w, f, y)

The positives were that one had options (“... *can go straight, turn left or right*”, b, f, y) and that one is further away from the road and noise (“... *verder van die lawaai af, geraas afgekeer deur die plante*”, w, f, o).

### **Road Design G (dead-end)**

The majority **liked** Road Design G, mainly because it is a quiet setup.

The reasons why participants disliked the road layout were:

- It will be quiet.
  - “*The cul-de-sac. Will be quiet.*” (w, f, o)
  - “*Less traffic and convenient.*” (w, m, o)
  - “*Minder verkeer, minder geraas, stilte.*” (w, m, o)
- Easy to manoeuvre: “*If you miss the turn, you use the cul-de-sac.*” (w, f, y).
- It is safer: “*Two-way traffic, safe, no obstacles to cause accidents.*” (b, f, y).

On the negative side it can cause obstructions (as there is no through-flow there is nowhere for traffic to go to).

### **Road Design H (one-way)**

The majority of the participants **disliked** Road Design H, mainly because of the inconvenience a one-way could cause in finding your way such as driving around the block if you have missed the building.

- “*One-way, problematic, should you get lost, once past a place, have to go around to come back.*” (b, f, y)
- “*If you miss it, how do you get back?*” (b, f, y)

The one-way can make access problematic: “... *teenoorgestelde kant toegang is moeilik.*” (w, f, o).

On the positive side, there would be less noise and it was simple, easy and straightforward.

### Road Design I (traffic circle)

Road Design I elicited **mixed** reactions, but overall with **more negative** than positive remarks. Most participants did not like Road Design I, because a circle was regarded by some as dangerous, access is a problem, and there could be too much traffic.

- Access can be problematic.
  - *“The one’s I don’t like at all are F and I. Because they just look too closed, like they are closing you off.”* (w, f, y)
  - *“... circle intersection busy, access to the parking is problematic.”* (b, f, o)
- It can be dangerous.
  - *“... dangerous as some people don’t understand circle rules, thus accidents.”* (b, f, y)
  - *“... from building one needs to be careful to join the road.”* (b, m, o)
- There can be too much traffic: *“... sirkel, te veel traffic.”* (w, f, y).

On the positive side a circle eases manoeuvrability and is also regarded by some as safer:

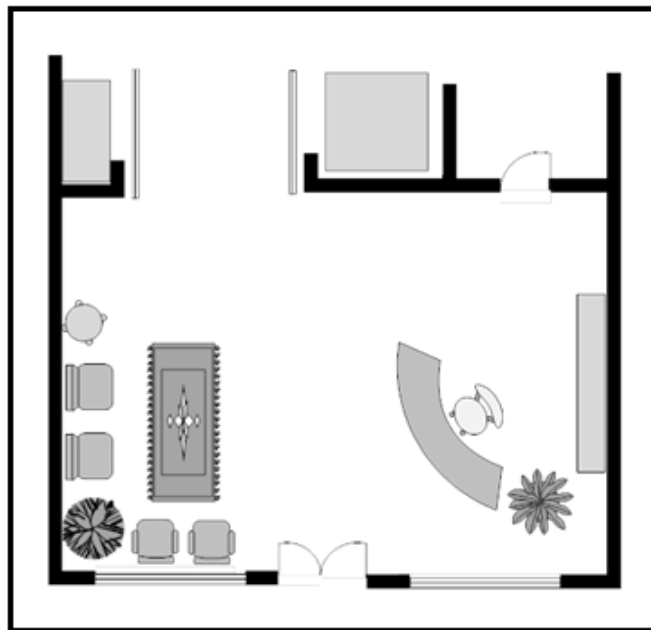
- A circle eases manoeuvrability.
  - *“Even if you can get lost, a circle makes it better to make a u-turn.”* (b, f, y)
  - *“Can access from any direction, easy for directions.”* (b, f, y)
- A circle can be safer: *“In a traffic circle it is not easy (to be involved in an) accident as people need to yield before entering road.”* (b, m, y).

## 6.5. CONCEPT 4: LOBBY PLAN

**Principle measured:** Firstly, the tendency for the majority of people to first look or reach towards the right (right hand bias) is assessed. Secondly, it is assessed that being out of the direct line of the door where people can see the occupant, having a full view of the room and door, being further from the door and the back positioned towards the wall i.e. a strong support behind the occupant, would be the best position to sit (the commanding position).

**Questions:** What is your opinion of the following lobby plan: What do you like? What do you dislike?

### 6.5.1. Positioning of the receptionist desk and visitors seating



**Table 6.3 Lobby plan preferences**

		All	Black	White/ Coloured	Male	Female	Young	Old
The reception desk to the right?		<b>n</b>						
	<b>Like</b>	15	6	9	4	11	7	8
	<b>Dislike</b>	6	3	3	3	3	2	4
	<b>Depends</b>	-	-	-	-	-	-	-
	<b>No answer</b>	4	1	3	2	2	2	2
The visitors' seating on left?	<b>Like</b>	11	4	7	4	7	5	6
	<b>Dislike</b>	4	3	1	1	3	3	1
	<b>Depends</b>	-	-	-	-	-	-	-
	<b>No answer</b>	10	3	7	4	6	3	7
Would receptionists feel comfortable, safe?	<b>Yes</b>	8	3	5	4	4	5	3
	<b>No</b>	7	3	4	1	6	2	5
	<b>Depends</b>	-	-	-	-	-	-	-
	<b>No answer</b>	10	4	6	4	6	4	6
Door to back of receptionist?	<b>Like</b>	9	3	6	4	5	4	5
	<b>Dislike</b>	10	5	5	1	9	5	5
	<b>Depends</b>	-	-	-	-	-	-	-
	<b>No answer</b>	6	2	4	4	2	2	4
Would visitors feel comfortable, feel safe?	<b>Yes</b>	9	5	4	5	4	4	5
	<b>No</b>	2	1	1	1	1	1	1
	<b>Depends</b>	-	-	-	-	-	-	-
	<b>No answer</b>	14	4	10	3	11	6	8
Window at back of visitor's chair?	<b>Like</b>	12	3	9	5	7	4	8
	<b>Dislike</b>	5	3	2	2	3	4	1
	<b>Depends</b>	-	-	2	-	2	1	1
	<b>No answer</b>	8	4	2	2	4	2	4
	<b>n</b>	All	Black	White/ Coloured	Male	Female	Young	Old
		25	10	15	9	16	11	14
		<b>%</b>						
The reception desk to the right?	<b>Like</b>	60	60	60	44.4	68.8	63.6	57.1
	<b>Dislike</b>	24	30	20	33.3	18.8	18.2	28.6
	<b>Depends</b>	-	-	-	-	-	-	-
	<b>No answer</b>	16	10	20	22.2	12.5	18.2	14.3
The visitors' seating on left?	<b>Like</b>	44	40	46.7	44.4	43.8	45.5	42.9
	<b>Dislike</b>	16	30	6.7	11.1	18.8	27.3	7.1
	<b>Depends</b>	-	-	-	-	-	-	-
	<b>No answer</b>	40	30	46.7	44.4	37.5	27.3	50
Would receptionists feel comfortable, safe?	<b>Yes</b>	32	30	33.3	44.4	25	45.5	21.4
	<b>No</b>	28	30	26.7	11.1	37.5	18.2	35.7
	<b>Depends</b>	-	-	-	-	-	-	-
	<b>No answer</b>	40	40	40	44.4	37.5	36.4	42.9
Door to back of receptionist?	<b>Like</b>	36	30	40	44.4	31.3	36.4	35.7
	<b>Dislike</b>	40	50	33.3	11.1	56.3	45.5	35.7
	<b>Depends</b>	-	-	-	-	-	-	-
	<b>No answer</b>	24	20	26.7	44.4	12.5	18.2	28.6
Would visitors feel comfortable, safe?	<b>Yes</b>	36	50	26.7	55.6	25	36.4	35.7
	<b>No</b>	8	10	6.7	11.1	6.3	9.1	7.1
	<b>Depends</b>	-	-	-	-	-	-	-
	<b>No answer</b>	56	40	66.7	33.3	68.8	54.5	57.1
Window at back of visitor's chair?	<b>Like</b>	48	30	60	55.6	43.8	36.4	57.1
	<b>Dislike</b>	20	30	13.3	22.2	18.8	36.4	7.1
	<b>Depends</b>	-	-	13.3	-	12.5	9.1	7.1
	<b>No answer</b>	32	40	13.3	22.2	25.0	18.2	28.6

More than half of the participants who were able to give a response liked the receptionist desk on the right as well as the visitors seating on the left.

### Reception desk to the right

Fifty percent or more of all groups except males at 44.4 percent, agreed with the reception area on the right. The reasons for the majority approving the reception desk to the right can be summarised as follows:

- A preference for being on the right (right hand bias).
  - *“... it's preferably to the right, I'm right-handed – everything is on the right.”* (c, f, o)
  - *“It is fine, you look to your right.”* (b, f, y)
  - *“It makes sense to have the desk to the right – and then it is easy to just turn around and have the seating on the left.”* (w, f, y)
  - *“Yes. Dit voel dalk net reg, want dit is waaraan ek meer gewoond is.”* (w, m, o)
- The receptionist is in control as she/he could see people coming into the lobby and the visitor seating area on the left. She/he also has easy access to everything and the receptionist is clearly visible to visitors.
  - *“Comfortable as she is in the centre of everything around her, office, visitors, don't have to go far to find the receptionist, easy to see her.”* (b, f, y)
  - *“Facing the door, can see who is coming in”* (w, f, y); *“Comfortable as can easily see clients as they are coming through”* (b, f, y); *“Position is cool, easy to locate as you get in”* (b, m, o); *“It's a very modern one. The position is good. When people get inside the building they can see the reception. They don't have to look for reception.”* (b, m, o)
  - *“Appealing, easy to connect with the receptionist and visitors area, very accessible, like everything about, easy to see your client coming in and where they are seated.”* (b, m, o)
  - *“Welcoming, because at the reception there's supposed to be somebody to say welcome and to assist you, give you guidance as to where to go etc.”* (c, f, o)



- Easy communication with visitors.
  - *“Okay as facing guests on left.”* (b, m, y)
  - *“Fine, not far from visitors, welcoming and for communication.”* (b, f, y)
- The open plan created an open feeling with enough light.
  - *“Nice and open – like openness.”* (w, f, o)

The minority, who did not like the reception desk on the right, mainly wanted the desk in the middle of the lobby facing the door, because it would be more comfortable for visitors and one does not need to look around for the receptionist. Single mentions were that the desk is too close to the door or, conversely, too far from the door, and therefore places the receptionist in danger.

- The receptionist should be in the centre.
  - *“Not comfortable, reception should face the door, no need turn left or right.”* (b, f, o)
  - *“Don’t like it, receptionist should be visible for the guests, straight with the entrance; when you walk in, you don’t have to look around.”* (b, f, y)
  - *“I dislike it. I think the receptionist should face you or visitors as you enter the office block.”* (w, f, y)
- The receptionist desk is too far from the door.
  - *“Too far from door, not good as receptionist is in danger.”* (b, m, o)
  - *“Move the receptionist closer to the door, convenient to welcome and in terms of the audience she’ll be closer.”* (b, m, y)
  - *“The reception desk is too close to the front door and the door behind the desk.”* (w, f, o)

## Visitors' seating on left

The participants answered the question of the visitors' seating in relation to the receptionist's position and the responses can therefore be expected to change if the position of the receptionist changes.

The majority of those in all groups who could give an answer, agreed with the visitor's area on the left. The main reason why the majority of the participants were positive about the visitors and receptionist facing each other was because it enhanced communication as they can clearly see each other and therefore clearly communicate. One participant remarked that the open plan design will not make people feel cramped.

- *“Comfortable as seated nearer to receptionist, not easy for her to forget about them.”* (b, f, y)
- *“Yeah, it's okay, because the receptionist, the visitors are sitting where the receptionist can easily communicate with them; so if they are waiting for a doctor, she can make direct contact and call them and direct them.”* (c, f, o)
- *“Space, not cramped, not on top, no obstruction in the door, ample space.”* (w, f, y)

On the negative side, the feeling of being watched (by the receptionist) and the coming and going of visitors might make seated visitors feel uncomfortable (especially if they are nervous about for example an upcoming meeting).

- *“Don't like facing the receptionist – need to feel not being watched.”* (b, f, y)
- *“No, I think uncomfortable. They might be nervous about a meeting or something and then there are permanently people coming in and going out. Yeah, traffic. Yeah, no, I don't think it's a good design.”* (w, f, y)

### 6.5.2. Perceptions of feeling safe and comfortable

Although not a clear majority, more White/Coloured, male and young participants felt that the receptionist would feel safe. Also without a majority, more females and older participants indicated that the receptionist would not feel safe. Only a clear majority of males (4 in favour and 1 against) and a slight majority of the White/Coloured participants (6 in favour and 5 against) did not have a problem with the door at the back of the receptionist. At least half or more of participants in the female, black, young and older groups felt that the door behind the receptionist's back could make her feel uncomfortable.

The majority of participants (half or more of those who responded) felt that visitors would feel comfortable and safe and did not have any concern with the window behind the visitors' seating.

#### **Would the receptionist feel comfortable, feel safe?**

Although more participants felt that the receptionist would feel safe and comfortable compared to those who did not, there was a concern about safety. She/he would feel comfortable because she/he has privacy by not facing the door, everything she/he needs is within easy reach and she/he can see through the window. The receptionist would feel safe because she/he would not directly face criminals entering the lobby area. Safety concerns were that she/he would be first in the firing line in the case of thugs entering the building, the space around the receptionist was too open (it should be more closed off to protect her/him), the door at her/his back exposed the receptionist and the reception table should be moved towards the back for protection.

- *“Yes, everything not far from her, office and guests.”* (b, f, y)
- *“Yeah, I think so. She can see the people coming into the building. She can watch the main door.”* (w, m ,o)
- *“I think she is, privacy, not facing the door. For safety, yes, as criminals won't be face to face with her when get in.”* (b, f, y)
- *“I think so. She's in the front of everything, the offices.”* (b, f, y)

- *“Yes. It makes life easier for the receptionist to see who is coming into the building and it’s easier to report to other departments.”* (b, m, o)
- *“Ja, sy kan almal “watch” wat inkom en wat daar sit ook.”* (w, m, o)

In terms of safety concerns the following are examples of remarks which were made:

- *“I think they should perhaps rather sit more to the back or behind her, or she should be closed off that she can still see them (the visitors) but they can’t necessarily see her the whole time.”* (w, y, f)
- *“That is an issue. That’s a danger zone to me. If thugs come in and they want to rob us, she’s one of the targets.”* (c, f, o)
- *“Te naby aan voordeur en agterdeur, exposed.”* (w, f, o)

### Door to the back of the receptionist

The majority felt that unless the door led to a private area used by the receptionist, the door behind her/him would cause an uncomfortable environment for the receptionist especially if the door leads to her/his boss’s office. The main reason for the discomfort would be that she/he would not be able to see what was going on behind her/him and people walking behind her could be a distraction. The main reason why the door behind the receptionist would not be an issue was that one would feel free and not trapped. The majority of female and black respondents disliked the door to the back of the receptionist. Males in particular (to a lesser extent White/Coloured respondents) did not have a problem with the door to the back of the receptionist.

Examples of mentions by participants for the door not making the receptionist feeling unsafe or uncomfortable or not, are:

- The door could make it easier for the receptionist or could be convenient.
  - *“Veilig, nie vasgekeer nie.”* (w, f, o)
  - *“Very convenient because she could report to other offices. She could just walk through to another door.”* (b, m, o)
- Conditional responses: depending what is behind the door.
  - *“Ek dink dit sal haar pla as die deur heeltyd oop is ook. Behalwe as sy skelm op die “computer” speel en die baas stap uit.”* (w, m, o)

- *“It depends on what it’s for. Like if it’s maybe like a fire exit or her own toilet or a guest toilet or what it’s for. If the door goes into the road, no, no, gosh, I wouldn’t feel safe, but that’s me, you know.”* (w, f, y)
- The door behind the receptionist will cause discomfort or a feeling of not being safe.
  - *“Door behind her distracts – but should not create a feeling of being unsafe.”* (w, m, o)
  - *“Better in front for her to see whoever comes in and out.”* (b, f, y); *“No, can’t see behind you.”* (w, f, o)
  - *“Intimidating.”* (w, f, o)
  - *“Sal pla, mense agter jou verby loop, unsettling.”* (w, f, y)
  - *“The unsafety, yeah. Maybe she has (not clear) with a door where she can lock. It could be comfortable but it’s not necessarily safe. It could be easy for her to access in and out and all that, but what if something happens? Is she really safe, will she manage to get to that door, because he’s going to target her ... no.”* (c, f, o)

<b>Would visitors feel comfortable, safe?</b>
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The concerns regarding the receptionist did not extend to the visitors - the majority of the participants who could give an answer felt that the visitors would feel safe. Again facing the receptionist was regarded as a positive as it enhanced communication. Being inside the building and not facing the door created a safe environment and being near to the door was also regarded as safer for a quick exit. The window behind the back of the visitor’s chair was not a big concern. No spontaneous remarks were made regarding the windows behind the visitors.

## Window at back of visitors' chairs

The majority of the participants (twelve) who were able to give a response did not have a problem with the window at the back of the visitors. The reasons why they liked the window were mainly that it gave light and fresh air as well as providing a vista.

- “*Fine for fresh air.*” (b, f, y); “*Cool as they can get fresh air.*” (b, m, o); “*Like it, gives light into the room.*” (w, f, o)
- “*Het iets om na te kyk.*” (w, f, y)

Conditional responses (two) were given depending on what was on the other side of the window. If it was “*manne with gunne*” (c, f, o) it will not be safe, or if the view was not green shrubbery it would be less acceptable:

- “*I’m not sure, it probably depends if it’s a tinted window or not, and maybe if there’s a greenery next to it, like some nice shrubs or bushes – it could perhaps make them feel at peace.*” (w, f, y).
- “*I remember a situation when I was sitting at the doctor and this gentleman asked me to open the window because he was feeling hot, so in that case, yes. But then if it’s thugs or “manne met gunne” and whatever, then they’re in danger.*” (c, f, o)

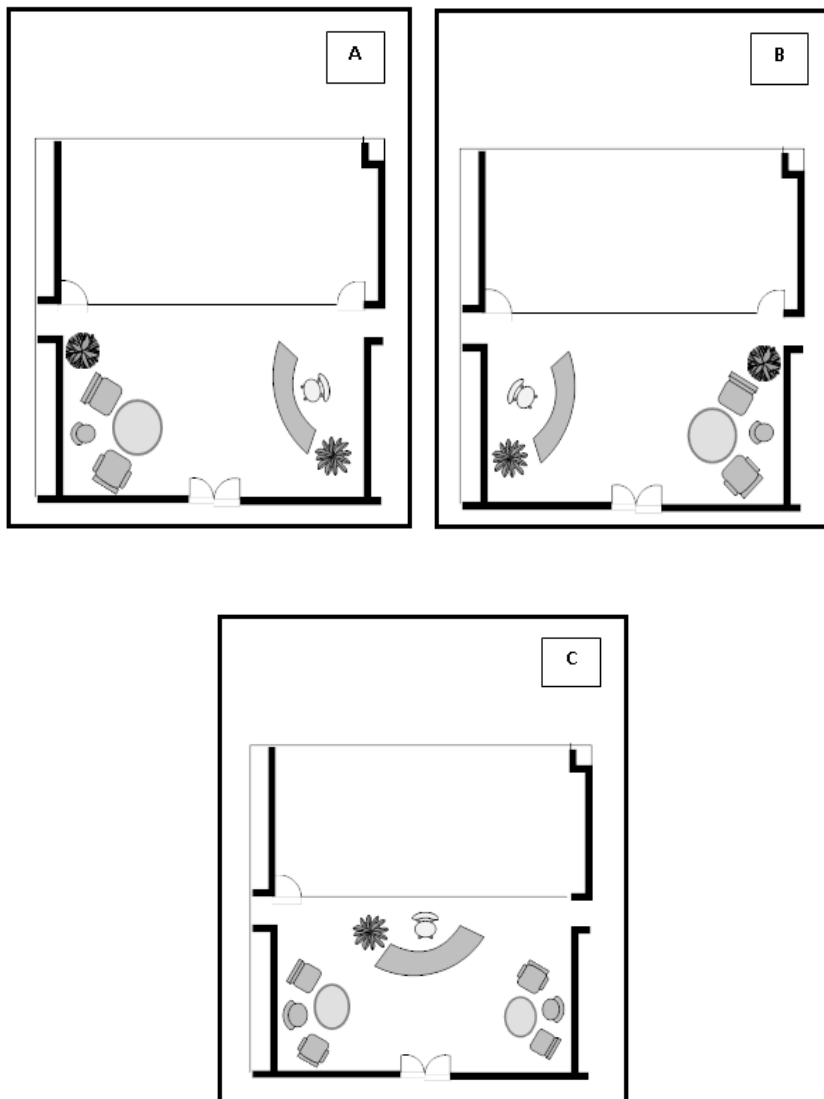
Five participants had a concern about the window. People can look in and they will be in the way if someone wants to open the windows from the inside.

- “*Don’t like idea as don’t like window behind me as if staff wants to open window, will have to make way for her.*” (b, f, y)
- “*Not good, passer-by look in and see guests.*” (b, m, y)
- “*Comfy cause of view not safe.*” (b, f, y)

## 6.6. CONCEPT 5: RECEPTION AREA

**Principle measured:** Based on the lobby plan in Concept 4, specific elements were changed with the purpose to establish the validity of the right hand bias and the commanding position.

**Questions:** Looking at A, B and C below depicting a reception area, what do you think of the reception desk on the right? Left? In front of you? Which one do you prefer as a visitor and why? How would somebody sitting at each of the options feel? Why?



**Table 6.4 Reception area preferences<sup>19</sup>**

Preference	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
<b>A</b>	11	8	3	3	8	8	3
<b>B</b>	1	1	-	-	1	1	-
<b>C</b>	18	7	11	6	12	8	10
<b>A&amp;B</b>	5	4	1	3	2	3	2
Preference	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
<b>A</b>	44	80	20	33.3	50	72.7	21.4
<b>B</b>	4	10	-	-	6.3	9.1	-
<b>C</b>	72	70	73.3	66.7	75	72.7	71.4
<b>A&amp;B</b>	20	40	6.7	33.3	12.5	27.3	14.3

When presented with the three reception area layouts, the majority of the participants (n=18) preferred Layout C across all groups (except Black participants where there was a slightly higher preference for Layout A) where the reception desk is in front of the entrance door. This was in contrast to the previous section where the majority of the participants indicated that they liked the design presented where the reception desk was on the right. Six participants expressed a definite dislike for Layout C. A total of eleven participants preferred Layout A (reception desk to the right), with another five preferring either Layout A or B (reception desk to the left).

#### **Option A (reception desk to the right of the entrance door):**

The main reasons why some participants preferred Option A were:

- From the receptionist's viewpoint: she/he had a good view of the entrance and visitors are not that much in her/his face.
- From the visitors' viewpoint: people tend to look to their right and it will make it easy and comfortable and once seated it is conducive to easy and good communication.
  - *“Okay, as not facing the door when visitors don't want to be seen by people coming through.”* (b, f, y)
  - *“Normally look on my right when enter a place, comfortable as facing receptionist, good for communication.”* (b, m, y)
  - *“Feel more welcoming as facing receptionist.”* (b, m, o)

<sup>19</sup> Multiple mentions possible



- *“Better, more comfortable feeling.”* (w, f, y)
- *“View the entrance and visitors seating and general overview.”* (w, m, o)

**Option B (reception desk on the left of the entrance door):**

Although some regarded Layout A and B as the same - just a mirror image of the other - one remarked that Layout B is the safest (as it goes against the natural tendency of right hand bias). In general, Layout B was not seen as comfortable and balanced:

- *“Not comfortable, does not feel right, off balance.”* (w, f, y)
- *“Little bit unwelcoming, sitting on right side would be uncomfortable for me.”*  
(b, m, o)
- *“Definitely not safe as can't see people coming in, poses danger.”* (b, f, o)

**Option C (reception desk in front of the entrance door):**

The main reason why Layout C is preferred was that it makes it very clear where the receptionist is and where to go to – straight ahead. The receptionist also has a clear view of both left and right hand sides and the symmetry of the design is pleasing.

- *“Very clear, know where you go.”* (b, f, o)
- *“I think C, because there's symmetry. It's right in the middle and there's like a coffee table on both sides, so it's a more symmetrical design.”* (w, f, y)
- *“I don't know, it probably depends on the person. I think perhaps in Option C she will feel more in control because she can like oversee the whole, both left and right-hand side.”* (w, f, y)
- *“Facing the door, easy for visitor to locate receptionist, okay as both sides – freedom of choice as where to sit.”* (b, f, y)
- *“Makes guests' life easier, don't have to look for the receptionist; best as receptionist facing the door, guests on both sides, also not facing the door, privacy for them.”* (b, f, y)
- *“Prefer this setting, receptionist can see people come in and out. No dangers.”* (b, f, o)

The negative sentiments regarding Layout C mainly revolved around a feeling of confrontation as visitors would directly face the receptionist as they entered. It would

also be confusing for visitors where to sit because there are two visitor seating areas and it would feel uncomfortable for the two sides of visitors staring/looking at each other. Some of the negativity could be removed if there were not two visitor seating areas right opposite each other.

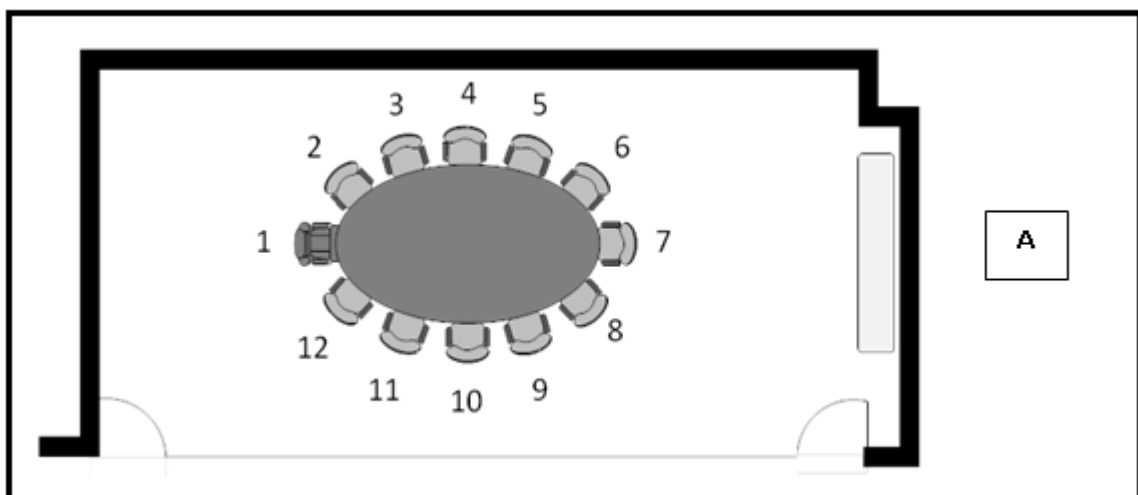
- “Two sides for visitors, would feel lost as you are confused as to which side to go.” (b, m, o)
- “Not comfortable as a visitor, due to staring at those across me”. (b, m, y), “Not comfortable facing each other, someone might be staring at me, no, not comfortable.” (b, f, y)
- “Don’t like – too confrontational for reception and visitors – mainly facing the entrance.” (w, m, o)

### 6.7. CONCEPT 6: COMMANDING POSITION: BOARDROOM

**Questions:** In which position would you prefer to sit and why? How will it make you feel? In which position would you sit where you would feel the most comfortable? And the most uncomfortable? Where should the person in authority sit? Why?

**Principle measured:** Assessing whether the form of a table could have an influence on the way people interact, where they would prefer to sit and which positions would be uncomfortable, as well as whether the form could have an influence on the perceptions of the position of authority. The assessment was done in relation to the number of doors.

**Boardroom: Oval, 2 doors**



**Table 6.5 Boardroom: Most comfortable position (two doors, oval)<sup>20</sup>**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
1	7	3	4	3	4	4	3
4	7	1	6	3	4	2	5
7	5	2	3	2	3	3	2
2	5	2	2	2	3	1	3
5	4	1	3	2	2	-	3
6	3	2	1	1	2	-	3
10	4	2	2	1	3	2	2
8	3	1	2	-	3	1	2
3	2	1	1	-	2	-	2
11	1	-	1	-	1	-	1
9	1	-	1	-	1	-	1
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
1	28	30	26.7	33.3	25	36.4	21.4
4	28	10	40	33.3	25	18.2	35.7
7	20	20	20	22.2	18.8	27.3	14.3
2	20	20	13.3	22.2	18.8	9.1	21.4
5	16	10	20	22.2	12.5	-	21.4
6	12	20	6.7	11.1	12.5	-	21.4
10	16	20	13.3	11.1	18.8	18.2	14.3
8	12	10	13.3	-	18.8	9.1	14.3
3	8	10	6.7	-	12.5	-	14.3
11	4	-	6.7	-	6.3	-	7.1
9	4	-	6.7	-	6.3	-	7.1

Positions 1 (n=7), 4 (n=7) and 7 (n=5) were selected as the **most comfortable** positions. Participants who selected Positions 1 or 7 did so either because they could have a view of the whole table or because they saw themselves as the person in authority. In Position 4 one would have a view of both doors and the rest of the table. Position 1 was selected by all participants as the first choice except White/Coloured and older participants, where Position 4 was the first choice and Position 1 the second choice.

<sup>20</sup> Multiple mentions possible

**Position 1 (n=7)**

- “... get in and out fairly easy, also person in authority sit here.” (w, m, o)
- “... focus point, because will make me feel in control.” (w, f, y)
- “... in the middle, can see people on both sides, easy for projector as will be facing direct to it; person in authority – have access to all in the meeting.” (b, f, y)
- “... able to interact with anyone, person in authority, effective for communication and interaction comfortable.” (b, m, y)
- “... view of all at the table.” (w, f, o).

**Position 4 (n=7)**

- “... see everybody, don't have to move, settled.” (b, f, y)
- “... can see both doors and people entering.” (w, m, o)
- “... number 1 will be the spokesperson or the person who's leading the meeting, so I'm right in the middle where I can focus and hear, and I have a problem with my eyes, see exactly this person here. And then, right in the middle, I'm also in the middle of the room nearest to the doors and not further away from either doors. ... And then also, what's nice about 4 and 10, you are able to see everybody's face who's around you.” (c, f, o)

**Position 7 (n=5)**

- “... middle, easy to see people in all directions and hear.” (b, f, y)
- “... will be facing chairperson, can also see all in meeting.” (b, f, y)
- “... get in and out fairly easy, also person in authority sit here.” (w, m, o)
- “Well, in my opinion the door on your left-hand side, that would normally be the main entrance, because of seat 1 being right in front.” (w, f, y)

**Table 6.6 Boardroom: Most uncomfortable position (two doors, oval) <sup>21</sup>**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
12	6	2	4	2	4	3	3
7	4	1	4	2	3	2	3
8	3	2	1	2	1	1	2
2	4	1	4	2	3	2	3
1	3	1	2	-	3	1	2
5	2	1	3	1	3	1	3
9	2	2	1	1	1	1	1
10	3	2	1	-	3	-	3
4	3	1	2	1	2	-	3
11	1	1	-	-	1	-	1
6	1	-	1	-	1	-	1
3	1	-	1	-	1	-	1
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
12	24	20	26.7	22.2	25	27.3	21.4
7	16	10	26.7	22.2	18.8	18.2	21.4
8	12	20	6.7	22.2	6.3	9.1	14.3
2	16	10	26.7	22.2	18.8	18.2	21.4
1	12	10	13.3	-	18.8	9.1	14.3
5	8	10	20	11.1	18.8	9.1	21.4
9	8	20	6.7	11.1	6.3	9.1	7.1
10	12	20	6.7	-	18.8	-	21.4
4	12	10	13.3	11.1	12.5	-	21.4
11	4	10	-	-	6.3	-	7.1
6	4	-	6.7	-	6.3	-	7.1
3	4	-	6.7	-	6.3	-	7.1

Positions 12 (n=6) and 7 (n=4) were mentioned most often as the **most uncomfortable** by all groups. Being seated next to Position 1 (authority) and people coming in from behind were the main reasons mentioned why position 12 or 7 would be the most uncomfortable. Position 7 was seen as isolated and uncomfortable with the screen behind the chair. The pattern was the same for all subgroups except for Black participants where Position 2 (n=4) was also mentioned as the most comfortable. Older participants also mentioned Positions 2 (n=3) and 5 (n=3). Position 2 was selected because one would sit at an angle and would feel left out when sitting on the left and Position 5 was selected because one would be far from the person in authority.

<sup>21</sup> Multiple mentions possible

<p><b>Position 1</b></p> <ul style="list-style-type: none"> <li>• “... seated next to authority, easy to pick on me.” (b, f, y)</li> <li>• “... people coming in behind me.” (b, f, o)</li> <li>• “... obscured from screen.” (b, m, o)</li> <li>• “... not a good view of presentation or person in authority.” (w, m, o)</li> </ul>
<p><b>Position 7</b></p> <ul style="list-style-type: none"> <li>• “... second-in-charge, isolated.” (w, f, y)</li> <li>• “... most uncomfortable as obscured from screen.” (b, m, o)</li> </ul>

**Table 6.7 Boardroom: Position of authority (two doors, oval) <sup>22</sup>**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
<b>1</b>	23	8	15	9	14	10	13
<b>7</b>	7	3	4	4	3	2	5
<b>4</b>	1	1	-	-	1	-	1
<b>10</b>	1	-	1	-	1	-	1
<b>3</b>	1	-	1	-	1	1	-
<b>2</b>	1	-	1	1	-	-	1
<b>Position</b>	<b>All</b>	<b>Black</b>	<b>White/ Coloured</b>	<b>Male</b>	<b>Female</b>	<b>Young</b>	<b>Old</b>
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>1</b>	92	80	100	100	87.5	90.9	92.9
<b>7</b>	28	30	26.7	44.4	18.8	18.2	35.7
<b>4</b>	4	10	-	-	6.3	-	7.1
<b>10</b>	4	-	6.7	-	6.3	-	7.1
<b>3</b>	4	-	6.7	-	6.3	9.1	-
<b>2</b>	4	-	6.7	11.1	-	-	7.1

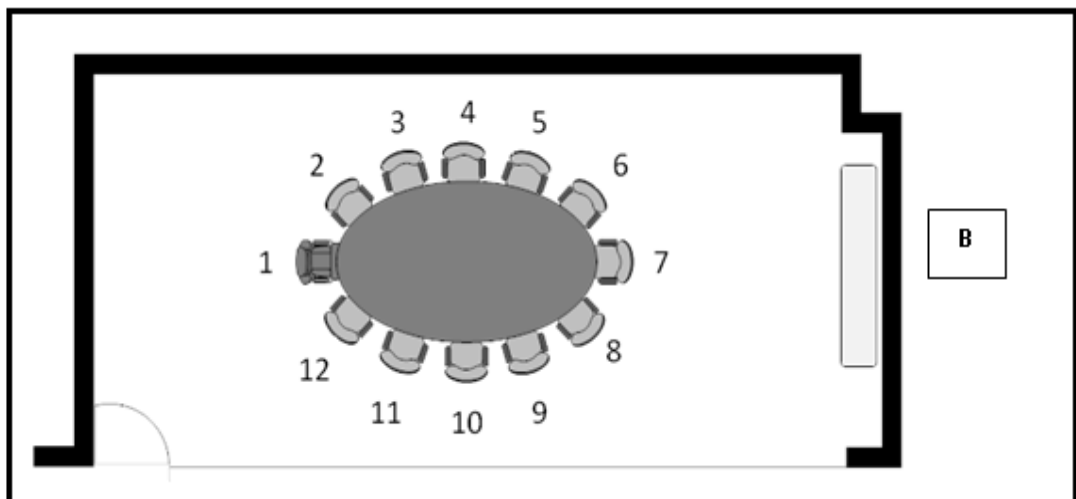
Position 1 (n=23) was by far the preferred **position of authority** by all groups and Position 7 (n=7) was preferred second most. The reasons for both positions were similar: she/he could see everybody and everybody could see her/him. The responses of the subgroups were similar.

<sup>22</sup> Multiple mentions possible

### Position 1 or 7

- “Because it’s on the head and the rear end.” (c, f, o)
- “... person in authority, as facing all in meeting, to enable to face all in the meeting self.” (b, f, y)
- “... where all can see her/him.” (b, f, y)
- “... in the middle of everyone.” (b, f, y)
- “... easy to control both sides, as will manage to coordinate both sides of the table, thus more concentration.” (b, m, o)
- “... able to see all and everything within reach.” (b, m, o)

### Boardroom: Oval, 1 door



In the setup with the oval boardroom table and one door, Position 7 (n=11), Position 4 (n=8), Position 10 (n=6) and Position 1 (n=6) were regarded as the **most comfortable** positions. White/Coloured, male and older participants had less of a preference for Position 7. Especially White/Coloured and older participants preferred Position 4. Position 12 (n=11) and Position 2 (n=8) were regarded as **the most uncomfortable**. Males were more likely to select Position 2 as the most uncomfortable. Position 1 (n=23) and Position 7 (n=8) were most often selected as the **position of authority** by all groups. The reasons for selecting these positions were similar to the two-door setup. Nine participants mentioned that the number of doors made no difference.

**Table 6.8 Boardroom: Most comfortable position (one door, oval) <sup>23</sup>**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
7	11	8	3	3	8	7	4
4	8	1	7	2	6	2	6
10	6	4	2	2	4	4	2
1	6	4	2	3	3	5	1
2	4	2	2	2	2	1	3
3	3	1	2	-	3	-	3
5	3	1	2	-	3	-	3
6	2	1	1	1	1	-	2
11	2	-	2	-	2	-	2
8	1	-	1	1	-	-	1
9	1	-	1	-	1	-	1
12	1	-	1	-	1	-	1
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
7	44	80	20	33.3	50	63.6	28.6
4	32	10	46.7	22.2	37.5	18.2	42.9
10	24	40	13.3	22.2	25	36.4	14.3
1	24	40	13.3	33.3	18.8	45.5	7.1
2	16	20	13.3	22.2	12.5	9.1	21.4
3	12	10	13.3	-	18.8	-	21.4
5	12	10	13.3	-	18.8	-	21.4
6	8	10	6.7	11.1	6.3	-	14.3
11	8	-	13.3	-	12.5	-	14.3
8	4	-	6.7	11.1	-	-	7.1
9	4	-	6.7	-	6.3	-	7.1
12	4	-	6.7	-	6.3	-	7.1

### Most comfortable position

#### Position 7

- “... most comfortable, not disturbed, see people come in.” (b, f, y)
- “Prefer to sit in Position 7, make you feel safe and comfortable. Most comfortable, personally I would sit in 7.” (w, f, y)

<sup>23</sup> Multiple mentions possible



**Position 4**

- “... most comfortable, visual of the door, screen.” (w, f, y)
- “... want hierdie is dalk waar hulle die kos en tee en goeters sit. Ja, jy wil dit nie agter jou hê, maar as jy naby is dan kan jy lekker kos eerste kry.” (w, m, o)
- “I’m right in the middle of the room. I’m not in the corner, furthest away from the door.” (c, f, o)

**Table 6.9 Boardroom: Most uncomfortable position (one door, oval) <sup>24</sup>**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
12	11	4	7	2	9	6	5
2	8	3	5	4	4	3	5
6	4	-	4	1	3	-	4
3	1	-	1	-	1	-	1
1	3	1	2	1	2	1	2
7	4	1	3	2	2	1	3
8	5	2	3	1	4	1	4
5	3	2	1	2	1	2	1
9	3	3	-	2	1	2	1
10	2	1	1	-	2	-	2
11	2	1	1	-	2	-	2
4	1	-	1	-	1	-	1
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
12	44	40	46.7	22.2	56.3	54.5	35.7
2	32	30	33.3	44.4	25	27.3	35.7
6	16	-	26.7	11.1	18.8	-	28.6
3	4	-	6.7	-	6.3	-	7.1
1	12	10	13.3	11.1	12.5	9.1	14.3
7	16	10	20	22.2	12.5	9.1	21.4
8	20	20	20	11.1	25	9.1	28.6
5	12	20	6.7	22.2	6.3	18.2	7.1
9	12	30	-	22.2	6.3	18.2	7.1
10	8	10	6.7	-	12.5	-	14.3
11	8	10	6.7	-	12.5	-	14.3
4	4	-	6.7	-	6.3	-	7.1

<sup>24</sup> Multiple mentions possible

## Most uncomfortable position

### Position 12

- "... most uncomfortable, back to the door." (w, f, y)
- "... because your back will be facing the door." (w, f, y)
- "... most uncomfortable – back towards the door." (w, f, o)

### Position 2

- "Most uncomfortable, at an angle, if can't speak louder, nobody can hear you." (b, m, y)
- "Ek dink 2 gaan te naby aan 1 wees en jy wil nie op die baas se plek sit nie, dan kan jy nie direk vir hom kyk as hy met jou praat nie, of iets." (w, m, o)

**Table 6.10 Boardroom: Position of authority (one door, oval)** <sup>25</sup>

Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
<b>1</b>	23	11	12	9	12	12	11
<b>7</b>	8	4	4	4	4	1	7
<b>10</b>	2	-	2	-	2	1	1
<b>5</b>	1	-	1	-	1	-	1
<b>4</b>	1	-	1	-	1	1	-
<b>Position</b>	<b>All</b>	<b>Black</b>	<b>White/ Coloured</b>	<b>Male</b>	<b>Female</b>	<b>Young</b>	<b>Old</b>
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>1</b>	92	100	80	100	75	100	78.6
<b>7</b>	32	40	26.7	44.4	25	9.1	50
<b>10</b>	8	-	13.3	-	12.5	9.1	7.1
<b>5</b>	4	-	6.7	-	6.3	-	7.1
<b>4</b>	4	-	6.7	-	6.3	9.1	-

<sup>25</sup> Multiple mentions possible

## Position of authority

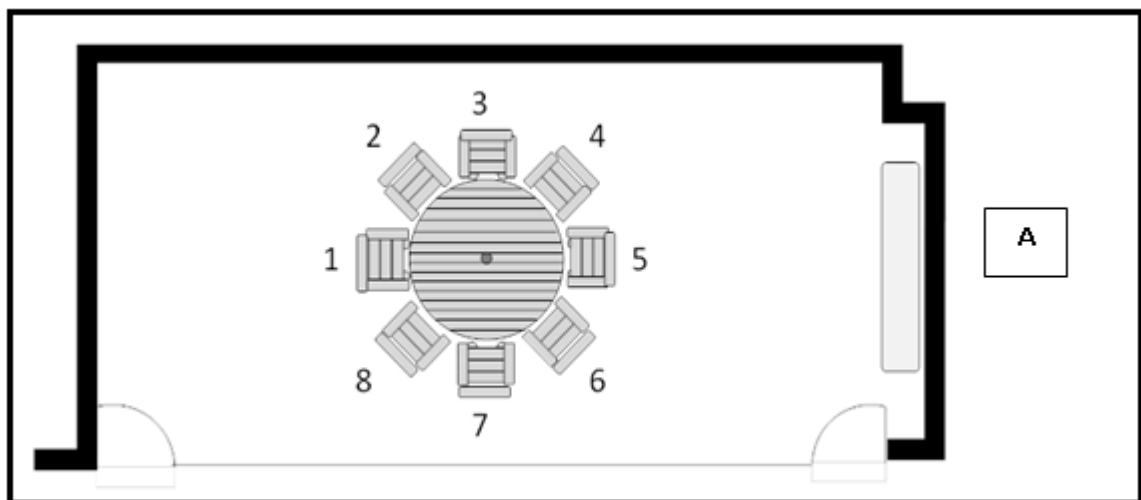
### Position 7

- “You can see the door, because it will make you feel in control.” (w, f, y)
- “Watch people enter and leave.” (w, f, o)

### Position 1

- “Person in authority - well, probably in number 1 because they can look at the whole table.” (w, f, y)
- “Easy access in and out, overview over the rest of the table. Will make me feel dominant.” (w, m, o)
- “Chairing the meeting, view of the table, centre of attraction.” (w, m, o)
- “Person in authority, can welcome those coming in.” (b, f, y)

## Boardroom: Round, two doors



Participants selected a wider variety of positions with the round table compared to the oval table. Position 3 (n=11), Position 7 (n=7) and Position 2 (n=8) were regarded as the **most comfortable** positions. These positions were selected mainly because of the view it provides of the room, the doors and all the people at the table. There was no clear consensus between the groups: Position 3 was selected by White/Coloured, female and young participants. Position 7 selected by Blacks, Positions 5 and 1 by males, and Position 3 and 2 by older participants. Positions 8 (n=8) and 7 (n=6) were regarded as the **most uncomfortable**. The main reasons were that one could not see

behind you and it created feelings of being trapped. Again there was no clear consensus between the groups: Position 8 was selected by White/Coloured, male and young participants, Position 7 and 8 by Black and female participants and Position 7 by older participants. The **person in authority** will sit at Positions 1 (n=15) and 3 (n=6). All groups selected these positions as their first choices. A person sitting in Position 1 can see the door, the whole table and it is also a dominating position.

**Table 6.11 Boardroom: Most comfortable position (two doors, round) <sup>26</sup>**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
<b>3</b>	11	3	8	3	8	6	5
<b>2</b>	8	1	7	3	5	3	5
<b>7</b>	7	4	3	3	4	4	3
<b>5</b>	7	3	4	4	3	4	3
<b>1</b>	5	3	2	4	1	2	3
<b>6</b>	5	-	5	-	5	1	4
<b>4</b>	5	1	4	2	3	1	4
<b>8</b>	3	1	2	-	3	1	2
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
<b>3</b>	44	30	53.3	33.3	50	54.5	35.7
<b>2</b>	32	10	46.7	33.3	31.3	27.3	35.7
<b>7</b>	28	40	20	33.3	25	36.4	21.4
<b>5</b>	28	30	26.7	44.4	18.8	36.4	21.4
<b>1</b>	20	30	13.3	44.4	6.3	18.2	21.4
<b>6</b>	20	-	33.3	-	31.3	9.1	28.6
<b>4</b>	20	10	26.7	22.2	18.8	9.1	28.6
<b>8</b>	12	10	13.3	-	18.8	9.1	14.3

<sup>26</sup> Multiple mentions possible

**Position 3**

- *“See what’s going on and entering the room ... can tell the mood of your boss, most comfortable.”* (b, f, y)
- **Positions 3 and 7** – *“Prefer to sit here, as not facing authority, not easy to pick on me first.”* (b, f, y)

**Position 2**

- *“Can see the door, the people and the screen.”* (w, f, y)
- **Positions 2, 3 and 4** – *“... view of the doors.”* (w, m, o)

**Positions 7**

- *“Prefer to sit here, most comfortable, still centre, can view all on either side.”* (b, m, y)
- *“Could easily coordinate with the rest of table – comfortable and welcoming to me and others on table.”* (b, m, o)
- *“Better view of all and everything.”* (b, m, o)

**Position 5**

- *“Nicely centred, can see all in meeting, no obstruction.”* (b, f, y)
- *“I think either at Position 5 or 6, once again, because it’s more to the back and it’s in the middle, or almost in the middle.”* (w, f, y)

**Table 6.12 Boardroom: Most uncomfortable position (two doors, round) <sup>27</sup>**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
8	8	4	4	3	5	5	3
7	6	4	1	1	5	2	4
2	5	4	1	2	3	3	2
6	4	2	2	2	2	2	2
4	3	-	3	2	1	1	2
3	2	-	2	-	2	1	1
5	2	-	1	1	1	2	-
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
8	32	40	26.7	33.3	31.3	45.5	21.4
7	24	40	6.7	11.1	31.3	18.2	28.6
2	20	40	6.7	22.2	18.8	27.3	14.3
6	16	20	13.3	22.2	12.5	18.2	14.3
4	12	-	20.0	22.2	6.3	9.1	14.3
3	8	-	13.3	-	12.5	9.1	7.1
5	8	-	6.7	11.1	6.3	18.2	-

**Position 2** – “Don’t like sitting on left-hand side, feel left out in the meeting.” (b, m, o)

**Positions 2, 3, 4** – “Voel vasgedruk.” (w, f, o)

**Positions 2, 8** – “As seated next to authority.” (b, f, y)

**Positions 6, 8** – “Back to the entrance.” (w, f, y)

**Position 5, 6, 8** – “Not easy to see what is happening behind you.” (b, m, o)

**Position 7**

- “Not facing the doorways, no escape route.” (w, f, o)
- “Most uncomfortable, back to the door.” (w, f, o)

<sup>27</sup> Multiple mentions possible

**Table 6.13 Boardroom: Position of authority (two doors, round) <sup>28</sup>**

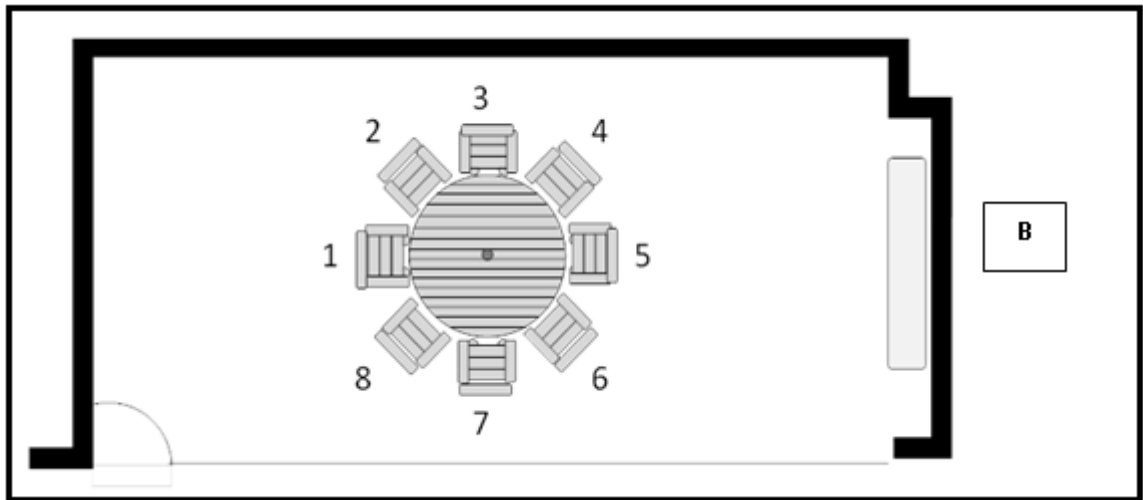
Position	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
<b>1</b>	15	7	8	6	9	9	6
<b>3</b>	6	2	5	2	5	2	5
<b>5</b>	6	1	5	2	4	2	4
<b>7</b>	2	-	2	-	2	1	1
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
<b>1</b>	60	70	53.3	66.7	56.3	81.8	42.9
<b>3</b>	24	20	33.3	22.2	31.3	18.2	35.7
<b>5</b>	24	10	33.3	22.2	25.0	18.2	28.6
<b>7</b>	8	-	13.3	-	12.5	9.1	7.1

**Position 1**

- *“To draw attention of all in the meeting.” (b, f, y)*
- *“Once again, they can then see the whole table and it’s closest to the main entrance or to the main door.” (w, f, y)*
- *“Person in authority, close to the door, can see guests coming in and greet them.” (b, f, y)*
- *“Position 1 and 5 is the authority seats, is dominating.” (w, m, o)*
- *“... view of all at the table.” (w, m, o)*

<sup>28</sup> Multiple mentions possible

**Boardroom: Round, one door**



Eight participants regarded Diagrammes A and B as the same – in other words the number of doors would not make any difference. Seven of these participants were Black and six young. There was an even distribution between males and females who thought that the door would make no difference. The **most comfortable** positions were Positions 3 (n=12), 5 (n=8) and 7 (n=8), mainly because there is a view of the door. The **most uncomfortable** were Position 8 (n=10), mainly because you would sit with your back towards the door or screen. The **person in authority** will sit in Positions 1 (n=17), 3 (n=6) or 5 (n=6) because the person will have a view of the door and can see everybody.

The difference between the positions with a room with two doors or one door was that Position 7 was no longer the second most uncomfortable position, but the least mentioned.



**Table 6.14 Boardroom: Most comfortable position (one door, round) <sup>29</sup>**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
3	12	3	9	4	8	6	6
5	8	4	4	4	4	4	4
7	8	6	2	4	4	6	2
2	8	1	7	3	5	3	5
6	5	-	5	-	5	-	5
4	4	1	3	1	3	1	3
8	3	1	2	-	3	1	2
1	3	2	1	3	-	2	1
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
3	48	30	60	44.4	50	54.5	42.9
5	32	40	26.7	44.4	25	36.4	28.6
7	32	60	13.3	44.4	25	54.5	14.3
2	32	10	46.7	33.3	31.3	27.3	35.7
6	20	-	33.3	-	31.3	-	35.7
4	16	10	20	11.1	18.8	9.1	21.4
8	12	10	13.3	-	18.8	9.1	14.3
1	12	20	6.7	33.3	-	18.2	7.1

**Position 5** – “Facing the door, same reasons as above, most comfortable.” (b, f, y)

**Position 5, 6** - “I think once again in 5 or 6. That would be the same, yeah. The second entrance didn’t really affect me, it’s not like I sneak out of a meeting. I’ll walk straight past it, I go out if I have to.” (w, f, y)

**Position 2** – “Can see the door, people and screen.” (w, f, y)

**Positions 2, 3, 4** – “To have a view of the door.” (w, f, o)

**Positions 2, 3** - “Make you feel: No pressure.” (w, f, o)

<sup>29</sup> Multiple mentions possible

**Table 6.15 Boardroom: Most uncomfortable position (one door, round) <sup>30</sup>**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
8	10	6	4	3	7	7	3
2	9	8	1	5	4	7	2
6	5	1	4	2	3	2	3
4	4	-	4	2	2	1	3
5	3	-	3	1	2	2	1
3	3	1	2	1	2	-	3
1	1	-	1	-	1	-	1
7	1	-	1	-	1	-	1
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
8	40	60	26.7	33.3	43.8	63.6	21.4
2	36	80	6.7	55.6	25	63.6	14.3
6	20	10	26.7	22.2	18.8	18.2	21.4
4	16	-	26.7	22.2	12.5	9.1	21.4
5	12	-	20	11.1	12.5	18.2	7.1
3	12	10	13.3	11.1	12.5	-	21.4
1	4	-	6.7	-	6.3	-	7.1
7	4	-	6.7	-	6.3	-	7.1

**Position 8**

- “Facing away from the door.” (b, f, y)
- “Most uncomfortable I think 8, once again because you’re sitting with your back to the door.” (w, f, y)

**Positions 1 and 8** – “Not facing the doorway.” (w, f, o)

**Positions 2 and 8** – “... most uncomfortable, as seated next to authority.” (b, f, y)

**Position 2** – “... at an angle, if can’t speak louder, nobody can hear you.” (b, m, y)

**Position 2** – “... don’t like sitting on left-hand side, feel left out in the meeting.” (b, m, o)

**Position 6** – “Obstructions to the screen and door.” (w, f, y)

**Positions 4, 5, 6** – “Ongemaklik om skerm te sien.” (w, f, y)

**Positions 6, 7** – “Cannot see who is entering.” (w, f, o)

**Positions 3, 4, 5, 6** – “Voel ingedruk, kan nie projektor sien nie.” (w, f, o)

<sup>30</sup> Multiple mentions possible

**Table 6.16 Boardroom: Position of authority (one door, round) <sup>31</sup>**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
<b>n</b>							
<b>1</b>	17	10	8	8	10	11	6
<b>3</b>	6	1	5	1	5	3	3
<b>5</b>	6	1	5	1	5	2	4
<b>4</b>	2	1	1	1	1	1	1
<b>7</b>	2	1	2	1	2	1	2
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
<b>%</b>							
<b>1</b>	68	100	53.3	88.9	62.5	100	42.9
<b>3</b>	24	10	33.3	11.1	31.3	27.3	21.4
<b>5</b>	24	10	33.3	11.1	31.3	18.2	28.6
<b>4</b>	8	10	6.7	11.1	6.3	9.1	7.1
<b>7</b>	8	10	13.3	11.1	12.5	9.1	14.3

**Position 1**

- “Close to the door and can walk there.” (b, f, y)
- “Because then he can face the whole table.” (w, f, y)

**Position 3**

- “Centre, see the people, door, screen, no strain.” (w, f, y)

**Position 5, 1** – “Because entry is on the other side.” (w, m, o)

**Positions 4, 5** – “Can see the doorway.” (w, f, o)

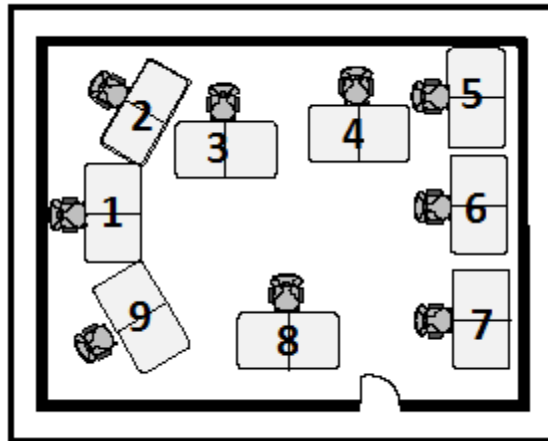
<sup>31</sup> Multiple mentions possible

## 6.8. CONCEPT 7: COMMANDING POSITION: OFFICE LAYOUT

**Principle measured:** Assessing the perception of the positions where occupants would feel the most comfortable when sharing office space with other occupants. In assessing the space not only the physical environment will be taken into account, but also aspects such as privacy, personal space and access in relation to others.

**Office layout: Multiple occupants: Shared space**

**Questions:** At which number would you prefer to sit and why? What will it make you feel like?



**Table 6.17 Multiple occupants: Shared space seating preference<sup>32</sup>**

	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
Position 9	11	3	8	2	9	4	7
Position 8	9	5	4	4	5	7	2
Position 2	8	3	5	1	7	2	6
Position 4	7	6	1	3	4	5	2
Position 1	6	2	4	3	3	2	4
Position 5	5	2	3	2	3	1	4
Position 6	4	2	2	4	-	2	2
Position 7	4	3	1	1	3	2	2
Position 3	2	2	-	1	1	-	2
<b>Position</b>	<b>All</b>	<b>Black</b>	<b>White/ Coloured</b>	<b>Male</b>	<b>Female</b>	<b>Young</b>	<b>Old</b>
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
Position 9	44	30	53.3	22.2	56.3	36.4	50
Position 8	36	50	26.7	44.4	31.3	63.6	14.3
Position 2	32	30	33.3	11.1	43.8	18.2	42.9
Position 4	28	60	6.7	33.3	25	45.5	14.3
Position 1	24	20	26.7	33.3	18.8	18.2	28.6
Position 5	20	20	20	22.2	18.8	9.1	28.6
Position 6	16	20	13.3	44.4	-	18.2	14.3
Position 7	16	30	6.7	11.1	18.8	18.2	14.3
Position 3	8	20	-	11.1	6.3	-	14.3

Overall Positions 9, 8 and 2 were the most preferred, but there was little consensus between and within groups. Fifty percent or more of the White/Coloured, female and older groups preferred Position 9. Black participants mostly preferred Positions 4 and 8, male participants preferred Positions 8 and 6, and younger participants preferred Position 8.

The participants used the following principles in selecting a preferred work station:

- Easy access (not having to manoeuvre around a table or person to get to your work station, for example Position 8 or 9)
- Having a view of all in the room (knowing what is happening in the environment, for example Positions 1 and 2)
- Minimising distractions (e.g., not having people walking past you all the time, for example Position 8). Some tried to solve the distraction issue by selecting to face the wall, but then privacy becomes an issue.

<sup>32</sup> Multiple mentions possible

- Having privacy (not having somebody looking at what you are doing for example Positions 5, 6 or 7).
- Not sitting with your back to someone (it creates discomfort for example Positions 5, 6 or 7).
- One person throughout all the setups mentioned that she prefers to sit on the right hand side as you enter the office.

#### **Position 9**

- *“I think that would be the perfect seat, also prefer to sit there. The advantage is that you can see the whole office, but they can’t see what you are busy doing.”* (w ,f, y)
- *“Well, it would make me feel comfortable so that nobody is watching at my back and it’s relatively accessible, except for the disturbances that it will cause, but that is about the best position is this whole room.”* (w, m, o)
- *“I wouldn’t mind sitting by Position 1, Position 2 and Position 9 because I have a view of everything that’s happening in the room; I know what’s happening in my environment or around me.”* (c, f, o)

#### **Position 8**

- *“Comfortable, close and facing the door and space to move around.”* (b, m, y)
- *“... more space to move around, not to disturb others Position 8, easy in and out and general overview.”* (b, f, y)
- *“It is in a stupid position. I don’t think there are any advantages of being at that table; everybody would walk past your desk, to get to their desks. You are facing the wall again, you’re sitting with your back towards all the other people and everybody can watch over you.”* (w, m, o)

**Position 2**

- *“The same. There will be too many visuals and you are so-so close to Position 3, so they will definitely distract you from what ...” (w, f, y)*
- *“Space behind you in the corner, you have a view of all and no one can see what you are doing.” (b, f, y)*

**Position 4**

- *“Nie lekker, aandag aftrek, wil nie vir almal heelyd kyk nie.” (w, m, y)*
- *“Well, that’s almost right on top of Position 5 and I think what they are busy doing, and you will see what they’re busy doing the whole time on their laptop screen or PC screen, so obviously that would distract you even more, never mind the fact you’re sitting right opposite the door, the entrance. Also distracting.” (w, f, y)*
- *“It is definitely too close to Table 5. The only advantage is that it has got a view of the door, and your back is not towards anybody else. So you can see everybody and everybody can see you, well, not everybody but it is in a bit of an awkward position with relation to Table 5.” (w, m, o)*

**Position 1**

- *“I think the advantage is that you can see everything that’s going on in the office. The disadvantage is that it could be quite distracting, because there’s always something going on in the office, so you can’t really focus on your work.” (w, f, y)*
- *“I would take, I would say, I would accept. Why? Because I have a view of everybody in the room.” (c, f, o)*
- *“Comfortable, as feeling of being in charge.” (b, m, o)*
- *“It is in a commanding position because you can watch over everybody. Disadvantages: Getting to the desk. Far from the door and you have to walk behind the other desk to get to your desk, you have to walk around it. You have to walk around this person’s table. Not easily accessible, yes.” (w, m, o)*

### **Position 5**

- *“Yeah. So I would say that is definitely a disadvantage looking towards the wall. Everybody is looking at your back. That would be a very uncomfortable position to work in, and it is too close to table Number 4.”* (w, m, o)
- *“Not comfortable, door behind me.”* (b, m, y)
- *“More far away, not involved with the rest in office.”* (b, m, o)
- *“Advantages: That you don’t have to see the people in the office the whole time. You could just stare at a wall. Disadvantages - The people behind you can see what you’re busy with the whole time, so there’s no privacy.”* (w, m, y)

### **Office layout: Single occupants**

Participants were consequently requested to indicate on a blank template which position they would prefer to sit in. The majority of the participants indicated that they would prefer to sit on the left hand side out of the direct line of the door. The preferred positions complied with the following commanding position<sup>33</sup> principles:

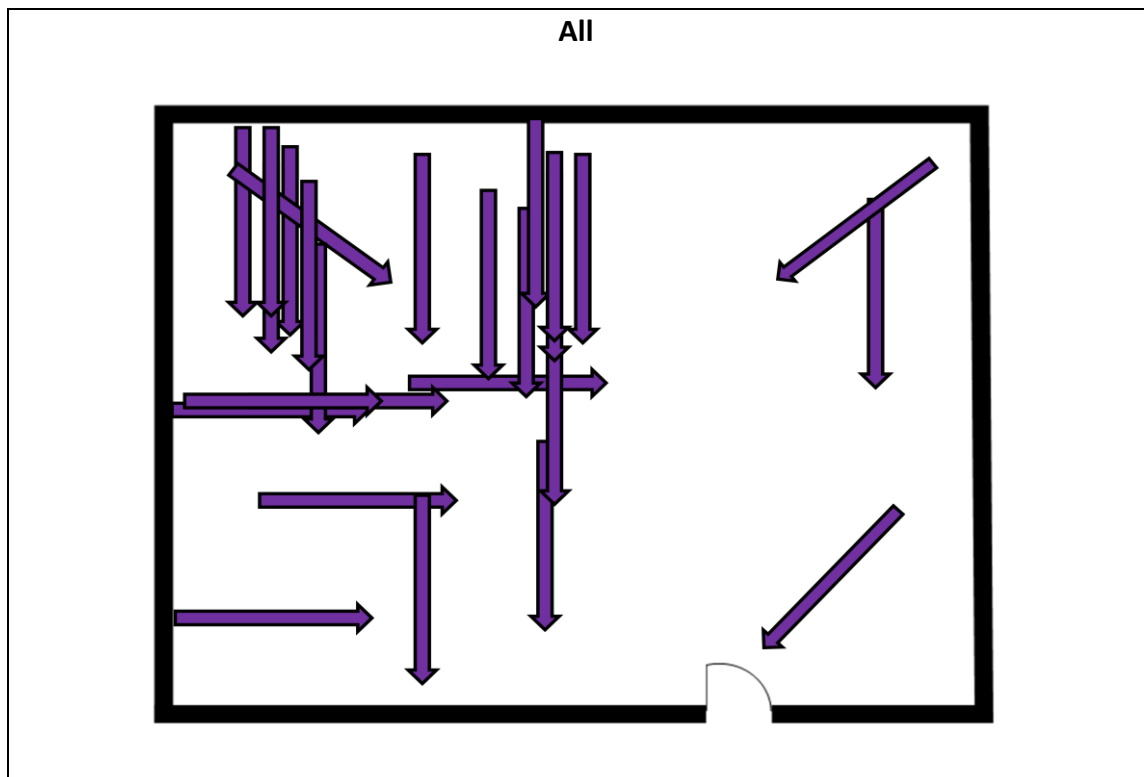
- Out of the direct line of the door where people can see the occupant.
- Full view of the room and door.
- Further from the door.
- Back positioned towards the wall i.e. a strong support behind the occupant.

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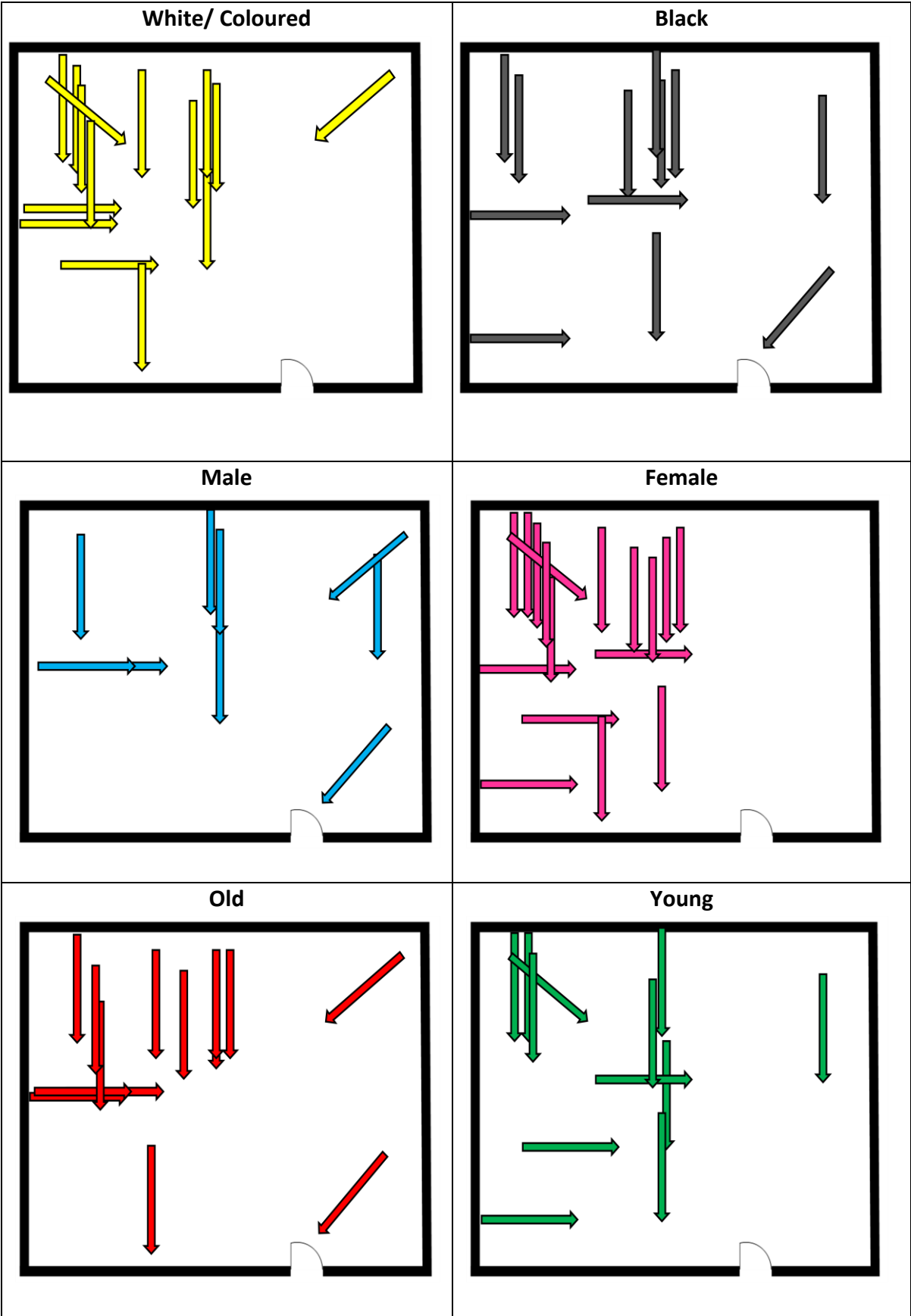
<sup>33</sup> Also see paragraph 3.4.2.2



The preferred positions are indicated below. The location of the arrow indicates the preferred position and the arrow points in the direction the desk would face.



Within each group two to four participants indicated a position which will not be in the commanding position range with proportionally more Black, males and older participants not indicating the commanding position and especially White/Coloureds and females selecting a commanding position.

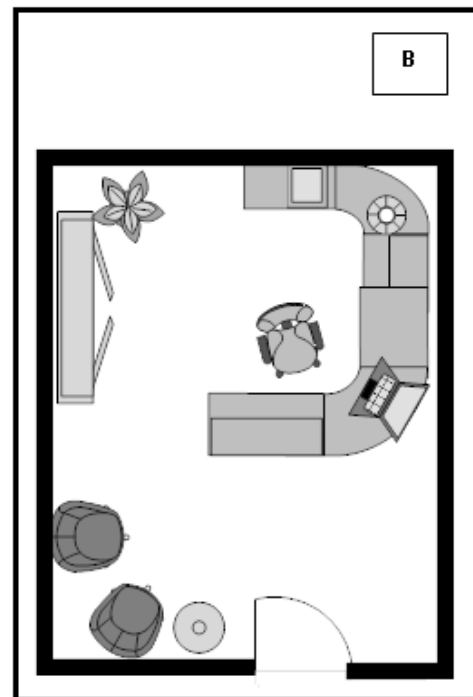
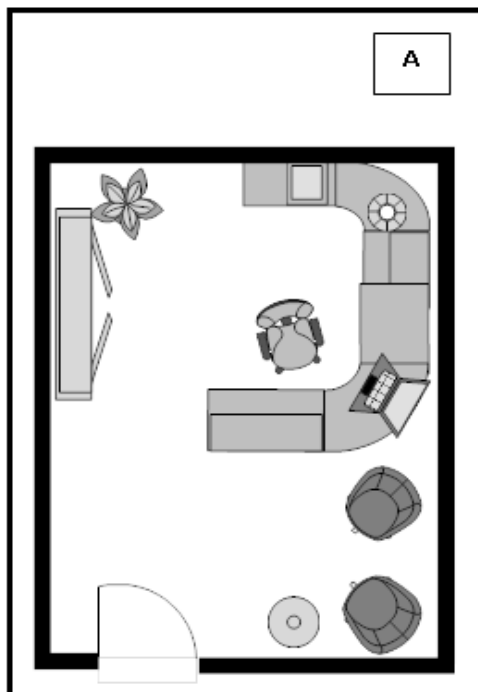


## 6.9. CONCEPT 8: DESK POSITIONING

**Principle measured:** Following on the spontaneous desk positioning in Concept 7, the perceptions were assessed of the best position where an occupant would feel most comfortable in either a large or a small space. The reasoning would indicate to what extent the commanding position as described in Concept 7 would come into play.

**Office layout: Desk positioning: Large office**

**Questions:** What do you think of Setup A and B? What do you like and what do you dislike?



**Table 6.18 Desk positioning: Large office - preference**

	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
<b>Setup A</b>	12	5	7	5	7	6	6
<b>Setup B</b>	9	3	6	2	7	4	5
<b>Neither</b>	4	2	2	2	2	1	3
	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Setup A</b>	48	50	46.7	55.6	43.8	54.5	42.9
<b>Setup B</b>	36	30	40	22.2	43.8	36.4	35.7
<b>Neither</b>	16	20	13.3	22.2	12.5	9.1	21.4

Twelve participants selected Setup A (desk in line with the door) and nine Setup B (desk not in line with the door). Black, male and young participants had the highest preference for Setup A. Comments regarding the layouts are discussed below.

### **SETUP A**

More likes than dislikes were mentioned. The layout is such that the person sitting at the desk can actually face the wall which is disliked, (n=6):

- “Because the person is facing the side wall instead of the door.” (c, f, o)
- “Not facing the door, prefer her to face the door, sort of welcoming the visitors.” (b, f, y)

The person at the desk should rather face the door:

- “Ideal for me, as I’m facing the door, I can see people as they come in and out. Also like the idea of visitors facing my direction for easy communication.” (b, f, y)

Being able to make easy contact with visitors was regarded as a positive (n=11):

- “Guests are fine as they are visible to the (person at the desk) and have privacy as they are not facing the door.” (b, f, y)
- “Able to see guests, and those coming in, not easily distracted as door not close prefer own space, easily accessible.” (b, f, y)
- “Comfortable as facing my visitors for good communication and welcoming them.” (b, m, y)
- “All is fine, all organised, door not too close, visitors position not disturbing, but easy to communicate with.” (b, f, y)

## SETUP B

More dislikes than likes were mentioned. The visitors are too far removed from the desk and it is therefore not conducive to communication and interaction (n=3): *“Do not like visitors far from me, like to engage more with me”* (b, m, o).

Where some like the idea of or prefer to face the door (n=4):

- *“Not ideal for me. The door must be right in the middle. Yeah, right in the middle; you can face the door directly.”* (c, f, o)
- *“Perfect as (person the desk) facing the door and guests not facing the door therefore privacy for them.”* (b, f, y)
- *“Door in B better positioned as direct with me, see visitors before they even come in.”* (b, f, y)

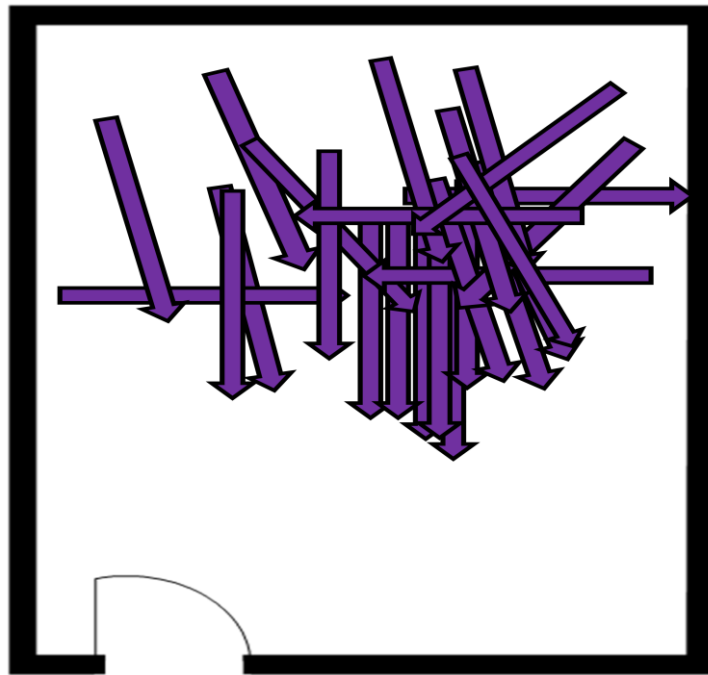
While others disliked it:

- *“I don’t like being straight opposite the door because if people are passing by they can see you the whole time, or they will distract you of what you’re doing. There’s not really anything I like about that.”* (w, f, y)

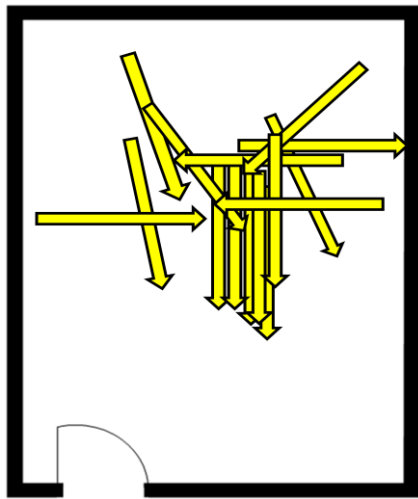
Another major dislike was that the visitors would feel excluded behind the door, they might not see if they have left something behind - the door should open the other way.

After the evaluation of the two presented layouts, participants were requested to indicate where they would prefer to sit on a provided template. As with the previous concept the majority indicated that they would prefer a position which is in the commanding position range. Again two to four participants per group indicated a position which would not be regarded as a commanding position, with older and White/Coloured participants with the highest number indicating a non-commanding position (4 each) compared to the other groups.

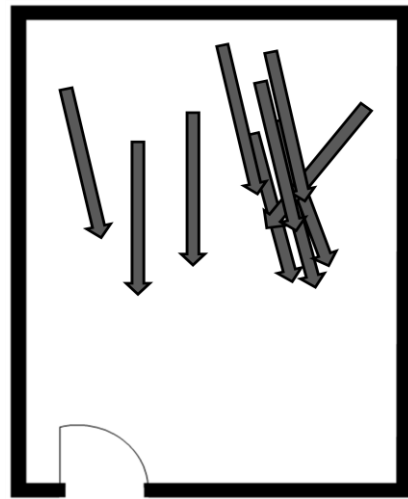
All

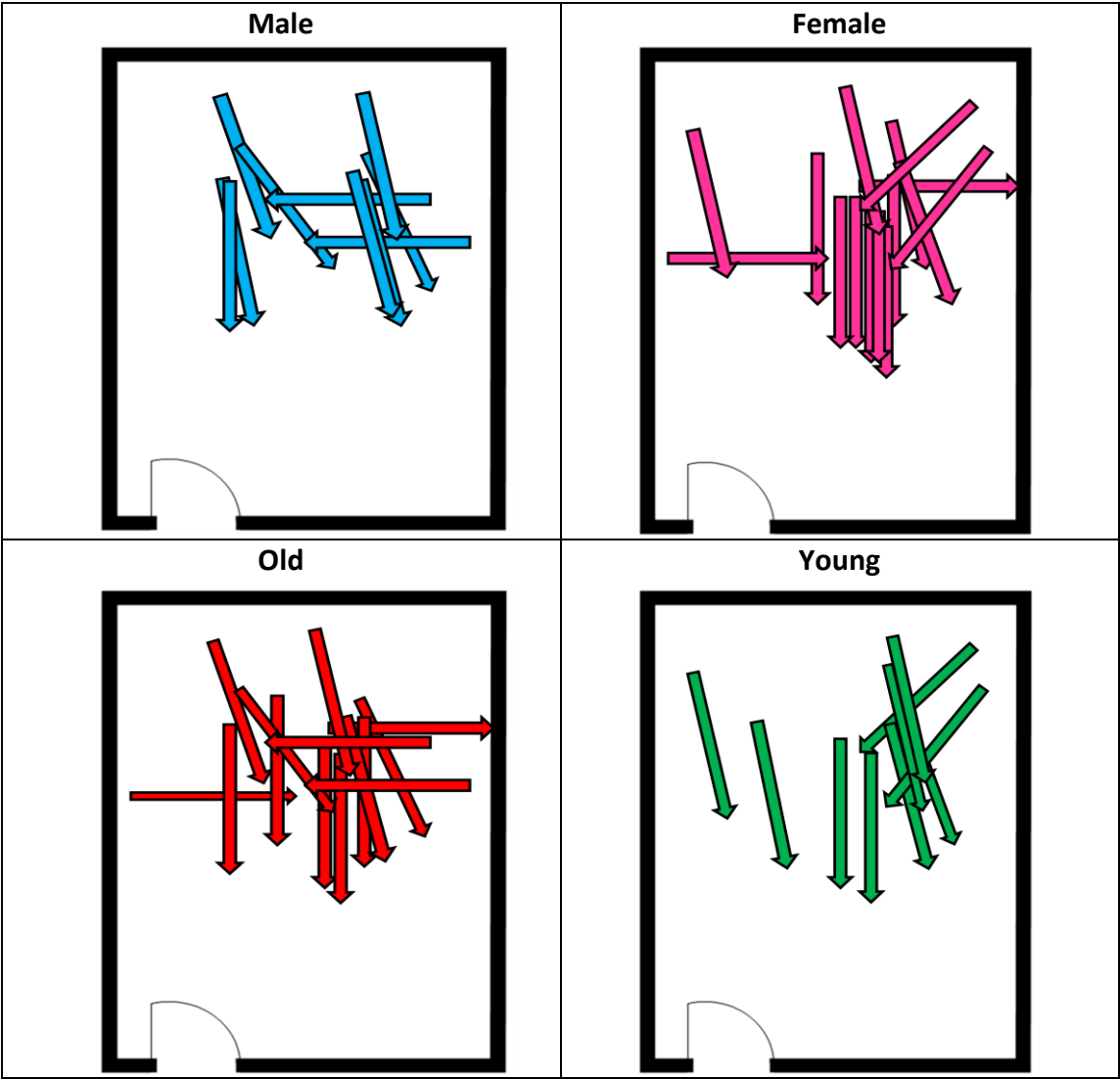


White/ Coloured



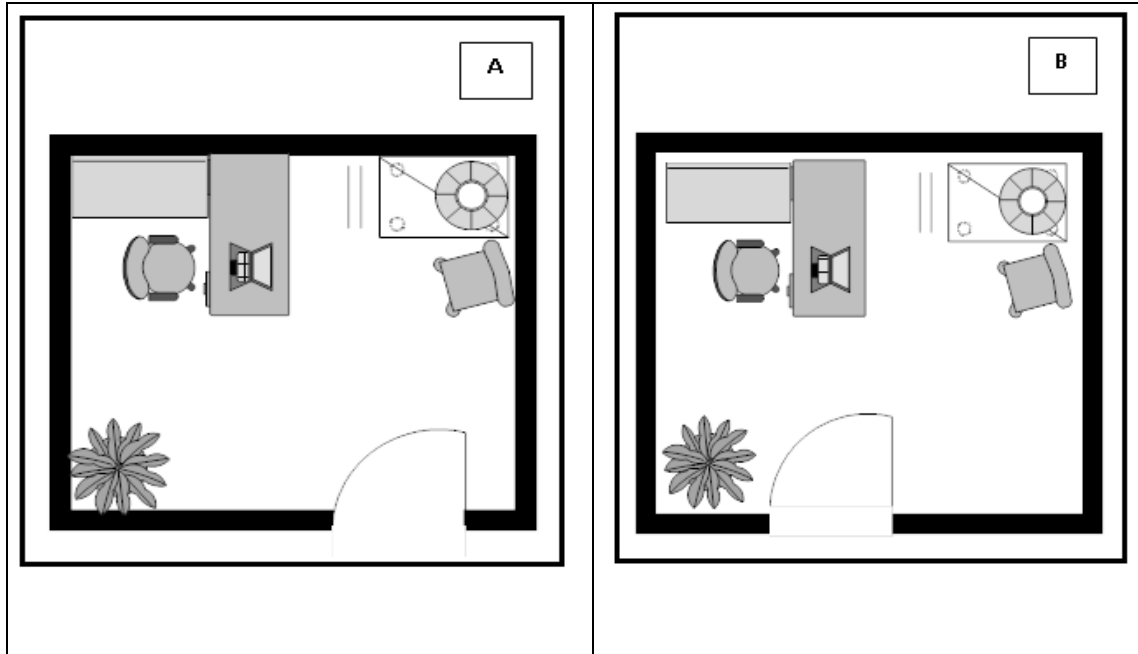
Black





**Office layout: Desk positioning: Small office**

**Questions:** What do you think of Setup A and B? What do you like and what do you dislike?



**Table 6.19 Desk positioning: Small office - preference**

	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
<b>Setup A</b>	16	6	10	6	10	6	10
<b>Setup B</b>	6	2	4	1	5	4	2
<b>None</b>	3	2	1	2	1	1	2
	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Setup A</b>	64	60	66.7	66.7	62.5	54.5	71.4
<b>Setup B</b>	24	20	26.7	11.1	31.3	36.4	14.3
<b>None</b>	12	20	6.7	22.2	6.3	9.1	14.3

Sixteen participants selected option A and six option B. More than half of the participants in all groups preferred Setup A with older participants the highest preference and younger participants the lowest preference. Comments regarding the layouts are discussed.



## SETUP A

Most of the remarks revolved around the door positioning. Most participants preferred that the door was not directly opposite the desk.

- *“I think Setup A is good. I prefer A. I think the door is making the difference here. The position of the door is definitely making a difference.”* (w, m, o)
- *“Same setup, different position of door. Prefer A door, not too close to you. No disturbance.”* (b, f, y)
- *“Love it as I can see a guest coming through and like fact that not facing the door – privacy as when working, don’t want to be seen by the whole world.”* (b, f, y)
- *“More spacious because of the door positioning, people entering don’t see you immediately.”* (b, f, y)
- *“Perfect for me, can see the whole room, privacy, in control.”* (w, f, o)
- *“Setup A is better purely just because of the door. It doesn’t really help the plant to be behind you so much. It would be nicer to actually see it.”* (w, f, y)

A minority felt that the desk should be nearer to the door (n=3) and that the desk should face the door (n=2), also that the desk should be on the right hand side and not left.

## SETUP B

Two participants liked the door opening in line with the desk:

- *“I will take B, because the door is right opposite me. Even though you are facing that way, it’s easier because the door is opposite you.”* (c, f, o)
- *“Door direct to me, so can see people coming through.”* (b, f, y)

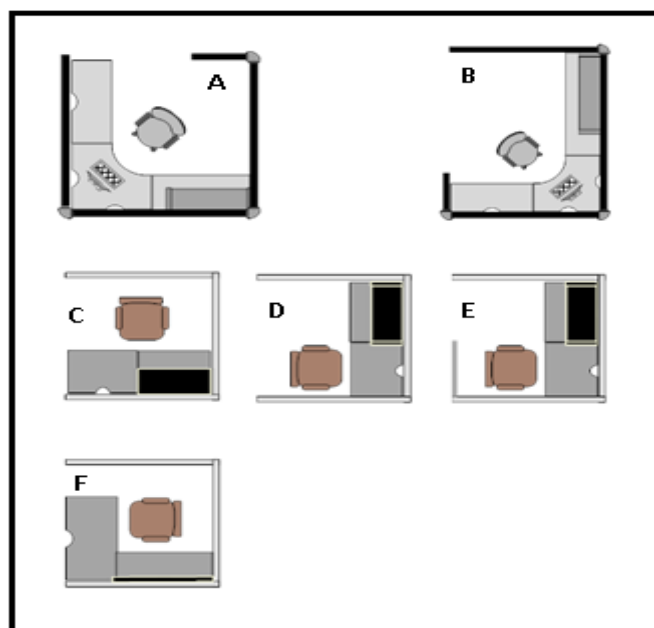
The majority disliked the door positioning as it does not afford any privacy (one person said it is confrontational).

- “Don’t like as desk facing door, no privacy, but disturbance from colleagues or people passing by.” (b, f, y)
- “Not comfortable, door slightly to the left, just no comfortable with door on left.” (b, m, y)
- “Feel exposed with doorway next to me. Door position.” (w, f, o)
- “Small, door directed towards you, no likes.” (b, f, y)
- “No, the only positive thing I can say there is the coffee being so close to me, but the rest is not really good. The bad thing about that is the door that’s right next to where you’re sitting. Once again, the passers-by will distract you.” (w, f, y)
- “Dislike: Seems like it is directly in line with the person sitting at the desk.” (w, m, o)

#### 6.10. CONCEPT 9: OPEN-PLAN CUBICLES

**Principle measured:** Perceptions of the most comfortable open-plan layout will be established as well as the reasoning behind the selection such as e.g., the trade-off between privacy and very limited space.

**Questions:** Below are examples of open-plan offices. Which one do you prefer and why? Which one would you like least and why?



**Table 6.20 Open plan Like<sup>34</sup>**

	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
<b>Diagramme A</b>	10	7	3	5	5	4	6
<b>Diagramme B</b>	5	3	2	3	2	4	1
<b>Diagramme F</b>	15	4	11	9	6	5	10
<b>Diagramme E</b>	2	-	2	1	1	1	1
	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Diagramme A</b>	40	70	20	55.6	35.7	36.4	42.9
<b>Diagramme B</b>	20	30	13.3	33.3	14.3	36.4	7.1
<b>Diagramme F</b>	60	40	73.3	100	42.9	45.5	71.4
<b>Diagramme E</b>	8	-	13.3	11.1	7.1	9.1	7.1

**Table 6.21 Open plan Dislike**

	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
<b>Diagramme A</b>	4	1	2	3	1	1	2
<b>Diagramme B</b>	5	1	3	4	1	1	3
<b>Diagramme C</b>	2		1	1	1	1	
<b>Diagramme D</b>	15	4	10	9	6	6	8
<b>Diagramme E</b>	5	1	3	3	2	1	3
<b>Diagramme F</b>	4	1	3	4	-	2	2
	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Diagramme A</b>	12	10	13.3	33.3	9.1	9.1	14.3
<b>Diagramme B</b>	16	10	20	44.4	9.1	9.1	21.4
<b>Diagramme C</b>	4	-	6.7	11.1	9.1	9.1	-
<b>Diagramme D</b>	56	40	66.7	100.0	54.5	54.5	57.1
<b>Diagramme E</b>	16	10	20	33.3	18.2	9.1	21.4
<b>Diagramme F</b>	16	10	20	44.4	-	18.2	14.3

### Open office setups preference

The most preferred setup was Diagramme F (n=15), followed by A (n=10), B (n=5) and E (n=2). Diagramme F was the first preference for all participants, except Black participants where Diagramme A was the first choice.

The main reason why **Diagramme F** was preferred was that the employee did not sit with her/his back to the door (or faced a wall).

<sup>34</sup> No likes were mentioned for Diagram C or D

- *“Can see when someone is coming in, bit more private/partially open.”* (w, f, y)
- *“I would take this one, F, where I’m facing the door. So F would be my ideal, my back is not towards the entrance and I can see who’s come in the door.”* (c, f, o)
- *“Best, back not towards door, not just wall in front of you.”* (b, f, o)
- *“I prefer F. Because it opens to the front so you can see when people come.”* (w, f, y)

**Diagramme A**, as the second choice, was selected because of the classy, spacious look. One person also preferred the privacy of not looking at the door.

- *“More executive, looks classy”* (b, m, o)
- *“Look spacious, don’t think could be too close to a colleague.”* (b, f, y)
- *“... as indicates me sitting on the right-hand side as you enter the office.”* (b, m, o)
- *“More privacy as no one can steal my ideas and spacious.”* (b, f, y)

**Diagramme B** is mainly preferred for the spaciousness and privacy it can provide.

### **Open office setups disliked**

**Diagramme D** was most disliked (n=15) by all groups, mainly because the employee's back was uncovered and one would not be able to make eye contact. Other issues mentioned were the straightness of the design (no curves), no privacy and a feeling of being boxed in.

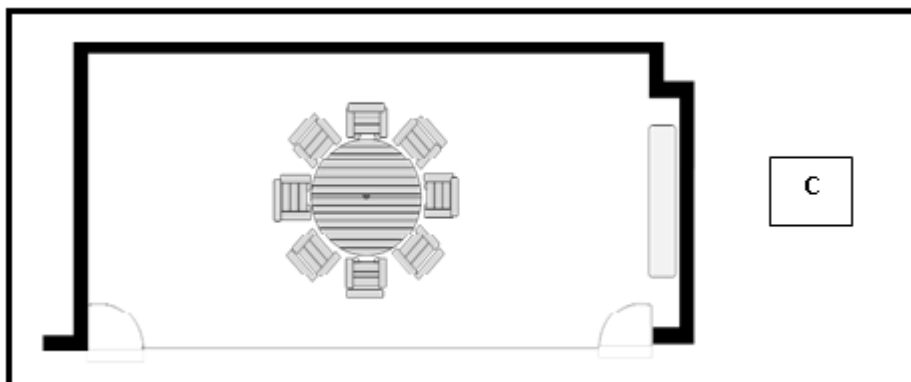
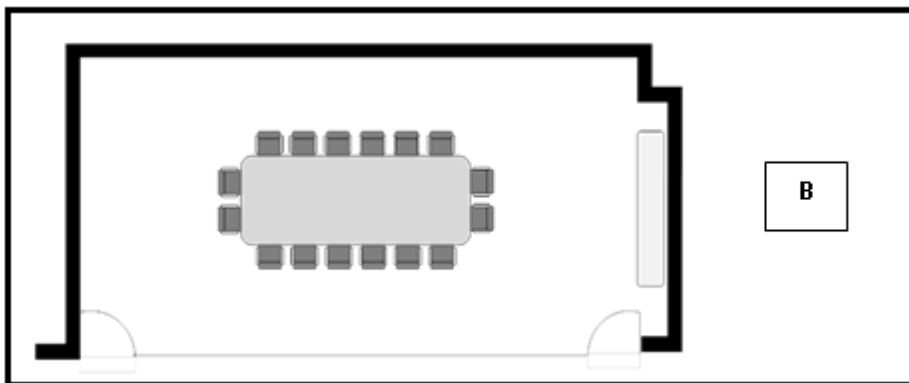
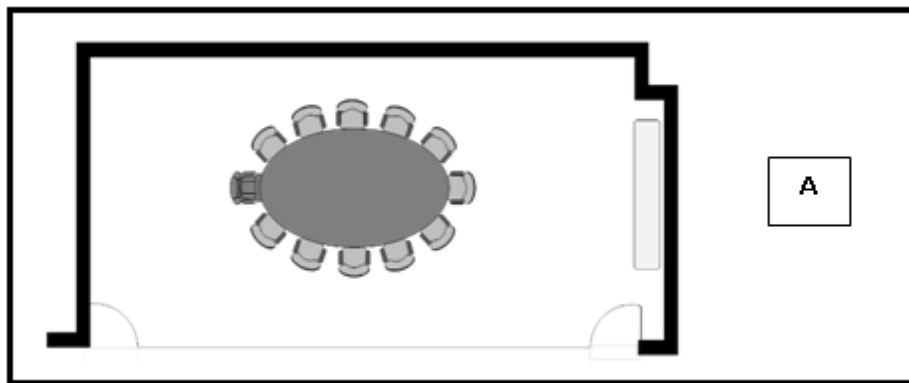
- *“I would say D. Facing with my back to the opening and it doesn't have a lot of space to work as well. Can't see who is standing behind me.”* (w, m, o)
- *“Dislike diagramme D – straight shape desk don't like as lack class.”* (b, f, y)
- *“No privacy, everything is straight facing me, cannot tilt as curvy desk in my B.”* (b, f, y)
- *“No, the very least I like D because it's totally open to the back and it's such a square design.”* (w, f, y)
- *“Closed in, boxed up, others see from behind and I don't like it.”* (b, f, y)

The reasons why the other setups were disliked, were mostly because the person's back is facing the door – because of the exposure one would feel vulnerable and not in control.

## 6.11. CONCEPT 10: BOARDROOM TABLE

**Principle measured:** Assessing the perception of the influence of the boardroom table's form on interaction as well as the preferred seating position. Where in Concept 6 the participants were not made aware of the table form, in this concept they are directly asked which table form will be most conducive to discussion and which would make them feel more comfortable.

**Questions:** Which table would be **more conducive to discussion**? Why? Which one would make you feel **more comfortable**? Why?



**Table 6.22 Table to be more conducive to discussion**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
Oval (A)	16	6	10	4	12	8	8
Rectangular (B)	2	2	-	1	1	1	1
Round (C)	8	4	4	3	5	1	7
Depends	1	-	1	1	-	-	1
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
Oval (A)	64	60	66.7	44.4	75	72.7	57.1
Rectangular (B)	8	20	-	11.1	6.3	9.1	7.1
Round (C)	32	40	26.7	33.3	31.3	9.1	50
Depends	4	-	6.7	11.1	-	-	7.1

**Table 6.23 Table that would make you feel most comfortable**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
Oval (A)	18	6	12	6	12	9	9
Rectangular (B)	1	1	-	1	-	-	1
Round (C)	7	4	3	3	4	3	4
Depends	1	-	1	1	-	-	1
Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
Oval (A)	72	60	80	66.7	75	81.8	64.3
Rectangular (B)	4	10	-	11.1	-	-	7.1
Round (C)	28	40	20	33.3	25	27.3	28.6
Depends	4	-	6.7	11.1	-	-	7.1

The table which would be more **conductive to discussion** and **comfortable** would depend on the number of people required to attend a meeting. The oval table would be better for a larger group and the round table for a smaller group.

The oval table (Diagramme A) was selected by the majority of all groups as both more conducive to discussion (n=16) as well as more comfortable (n=18). The round table was the second choice (n=8 and n=7 respectively). Only two participants selected the rectangular table as most conducive to conversation, and one as more comfortable. Although the majority in each subgroup selected the oval table, a third or more of Black and male participants selected the round table as both more conducive to conversation and more comfortable.

### **Oval table (A)**

The oval table was **preferred** because of the following reasons:

- **More open and inviting:**
  - *“Best, more inviting and comfortable, curves are good.”* (w, f, o)
  - *“Oop en gemaklik.”* (w, f, o)
- **No hierarchy:**
  - *“Makes everyone feel the same, best for discussion.”* (b, f, y)
  - *“Hiërargie nader.”* (w, m, o)
- **People are closer which increases eye contact and improves communication:**
  - *“Oval shape keeps people closer, easy to bond.”* (b, f, y)
  - *“As all closer due to round shape, can see each other, sort of bonding.”*  
(b, f, y)
  - *“Oval shape bring people closer, everyone is audible, just love the setup, shape of table, seats.”* (b, m, y)
  - *“Eye to eye contact, ideal as one authority facilitating.”* (b, m, o)
  - *“More conducive, better visuals, more comfortable, very informal setting.”* (w, f, y)
  - *“In my personal opinion, I would say A. Because it’s not too round, they can seat more people and it gives a warmer, more comfortable feeling.”*  
(w, f, y)

### **Round table (C)**

Reasons why the round table was **preferred** were:

- **It is small and therefore people are closer:**
  - *“Best, small, together, no shouting and comfortable.”* (b, f, o)
  - *“More conducive, people closer, thus good communication.”* (b, m, y)
  - *“Number of seats few, all would be involved, round table more conducive as tend to be closer, thus more engaging.”* (b, m, o)
  - *“I would say C. Because it’s a smaller table. Yeah, a big table usually people sit too far from each other and you end up having to sit across a big table and too far away from each other makes it difficult.”* (w, m, o)



- **There is no hierarchy:**
  - *“Equal distances and power positions closer, more cosy, smaller, less people, round feeling.”* (w, f, o)

### **Rectangular table (B)**

Although a rectangular table is virtually the norm in boardroom tables, it was not preferred by the vast majority. The two participants who preferred the rectangular table preferred it because one could read facial expression as people are facing each other, and it is a better setup for a larger group.

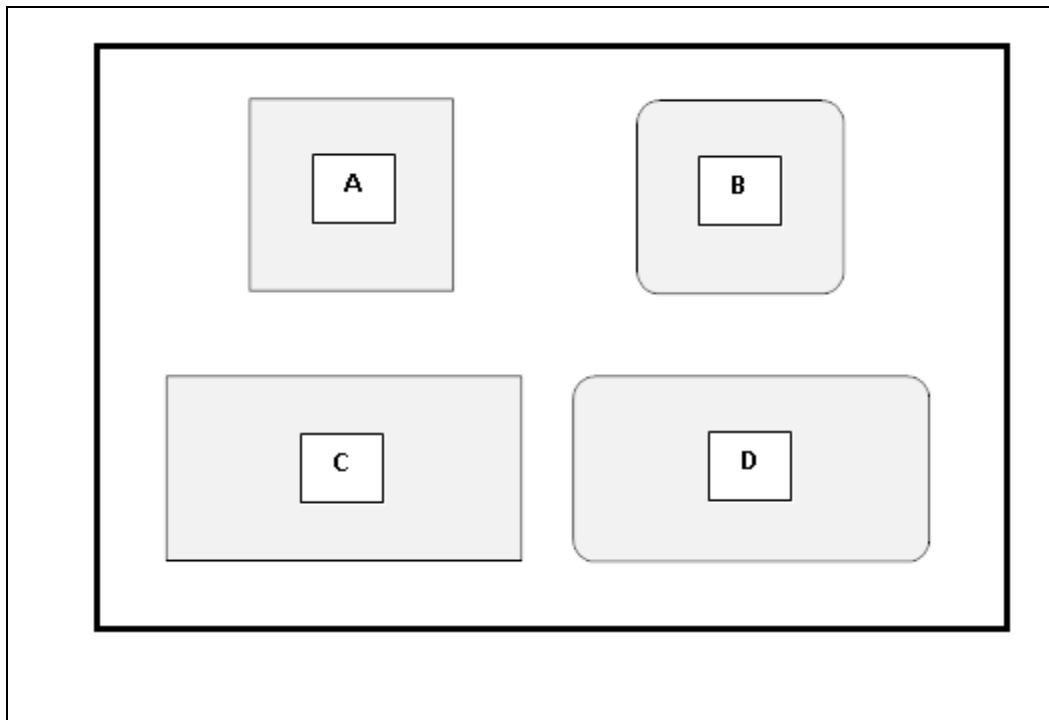
Remarks why certain table forms were **not selected** are:

- **Oval table (A)** – No negative mentions.
- **Rectangular table (B)** – It is cold, not comfortable, is too long, one would not be able to hear each other:
  - *“I don’t like B at all. ... It just looks cold and unpleasant.”* (w, f, y)
  - *“Rectangular not bonding as too far from one another ... don’t look comfortable.”* (b, f, y)
  - *“Top dogs, intimidating.”* (b, f, y)
- **Round table (C)** – The table is too small (maybe for a smaller company), people are too in your face and personal space is invaded: *“don’t like it at all, round table, thus not accommodating enough people.”* (b, f, y).

## 6.12. CONCEPT 11: DESKS

**Principle measured:** Assessing the preference for rounded or sharp edges and specifically the reasoning behind the preference.

**Questions:** Below are different shaped desks. Which would you prefer and why? How will it make you feel?



**Table 6.24 Desk corners**

Position	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
<b>Tables A or C</b>	3	-	3	1	2	3	-
<b>Tables B or D</b>	22	10	12	8	14	8	14
<b>Position</b>	<b>All</b>	<b>Black</b>	<b>White/ Coloured</b>	<b>Male</b>	<b>Female</b>	<b>Young</b>	<b>Old</b>
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Tables A or C</b>	12	-	20	11.1	12.5	27.3	-
<b>Tables B or D</b>	88	100	80	88.9	87.5	72.7	100

The vast majority of participants from all groups selected the rounded corner options, B or D (n=22). Only three participants selected A or C. Their reasons for selecting A or C were that the straight design looks more formal, more professional and it is easier and cheaper to produce. The main aspect which attracted participants to select B or D

was the rounded corners. It is more comfortable, reduces danger and creates calmness (resembles nature):

- *“More classy, corners not sharp as to me old-fashioned, more relaxed and professional.”* (b, f, y)
- *“No, I think D, because that’s a bigger table and it’s got softer, rounded edges, so I can’t bump my leg against the sharp edges because I bruise easily. And it just looks nicer and safer. It’s a more rounded-off look.”* (w, f, y)
- *“Big, spacious, smooth edges, gives you a feeling of calmness, less formal.”* (w, f, y)
- *“And then the corners are not sharp, which can hurt your thigh or your leg or whatever. Sometimes you bump into furniture, so I would prefer D. I would not feel cluttered, I have space. A large area of where I can execute my work.”* (c, f, o)
- *“Rounded corners – natural feeling.”* (w, m, o)

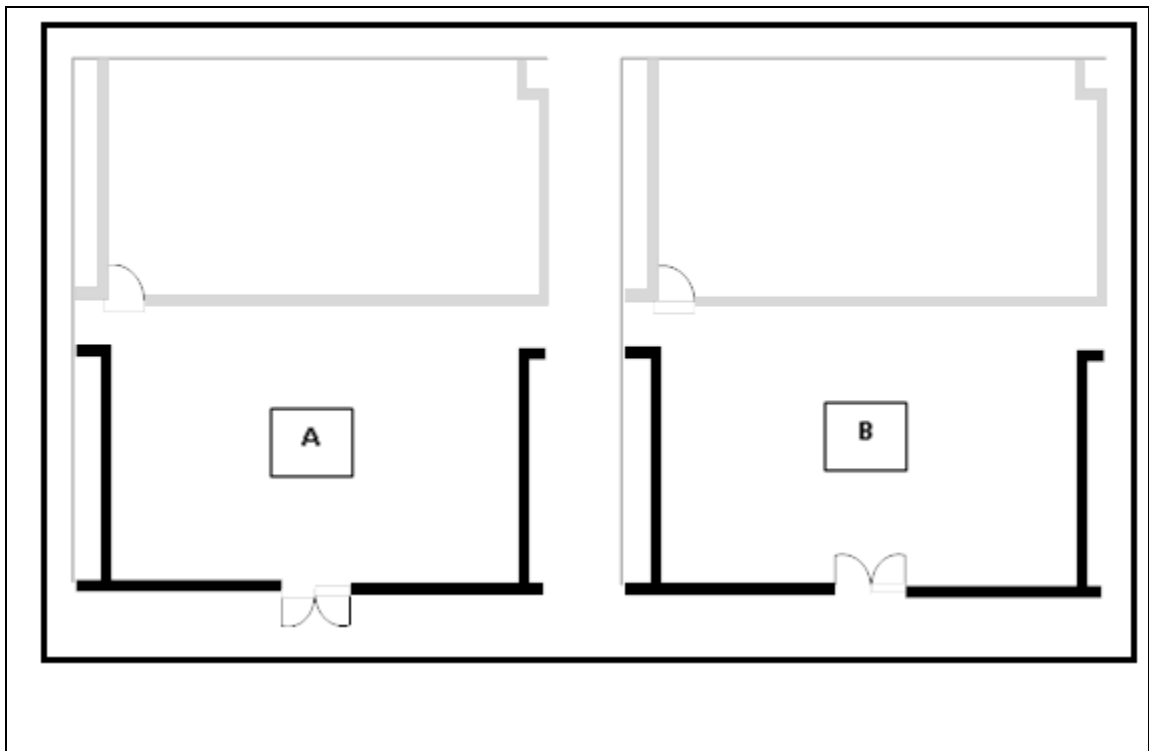
Selecting between the bigger and smaller desk would depend on the size of the office, *“it will make me work faster and all my things will be within my reach”* (b, m, o) (but more space also encourages clutter).

## 6.13. CONCEPT 12: DOORS

### Door swing

**Principle measured:** Establishing the preference for door swing towards the inside or outside. Support for the door swing towards the inside when entering a room would support the *feng shui* contention that design should support the ease of flow, compared to opening a door towards the outside which would create some discomfort.

**Questions:** Assume you are entering from the outside: The doors in A are opening towards the outside and B towards the inside. Would it make a difference to you? In what way? Why?



**Table 6.25 Door swing**

	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>n</b>						
<b>Inside</b>	16	5	11	4	12	6	10
<b>Outside</b>	6	2	4	3	3	3	3
<b>Does not matter</b>	3	3		2		1	2
	All	Black	White/ Coloured	Male	Female	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>16</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Inside</b>	64	50	73.3	44.4	75	54.5	71.4
<b>Outside</b>	24	20	26.7	33.3	18.8	27.3	21.4
<b>Does not matter</b>	12	30	-	22.2	6.3	9.1	14.3

The majority (n=16) of all groups preferred a door that would open towards the inside, with six preferring the door to open towards the outside. Males had the lowest preference at 44.4 percent for the door to open towards the inside. The remainder of the participants felt that it would not matter whether the door opens towards the inside or the outside. Opening a door towards the inside goes with the flow; it gives the feeling of being welcomed. One immediately enters the room compared to opening the door towards the outside which can be destructive as the door can hit you in the face if somebody opens it.

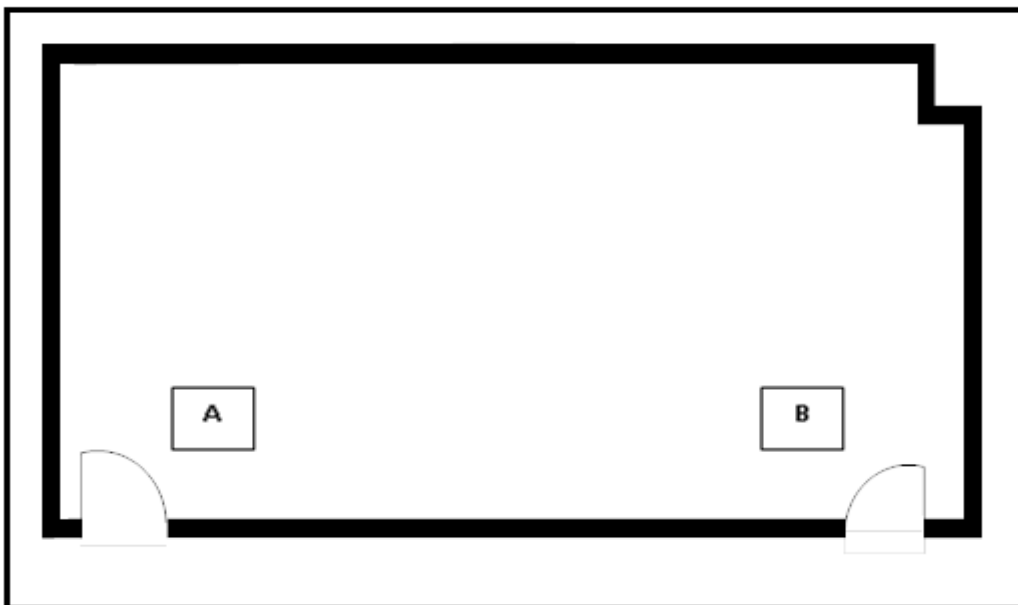
- *“Would make a difference, common to open towards inside, use more energy when opening towards outside.” (b, f, y)*
- *“Opening towards outside destructive and can easily bump into me.” (b, f, y)*
- *“Makes life easier as maybe holding files, or raining rushing in, someone is chasing you, no need to pull door towards me, just push and throw yourself in.” (b, f, y)*
- *“Opening towards outside destructive whereas towards inside convenient as you don’t have to make way for door to open.” (b, m, o)*
- *“It gives a feeling of being welcomed if it opens inwards. To the inside. It’s like they’re welcoming you in.” (w, f, y)*
- *“I prefer a door that goes inside. Because when you open to the inside you’re walking into the room and immediately your body’s brought into the room; whereas if it’s a door that you have to bring outside, the person can hide behind the door.” (c, f, o)*

One person remarked that opening the door towards the outside created more space on the inside for furniture, for example.

### Door hinge

**Principle(s) measure:** Again assessing the concept of the right hand bias (see paragraph 5.4.4), this time in the context of the door hinge. If the right hand bias is confirmed, the door opening towards the left would be disliked.

**Questions:** The door in A is opening towards the left and B towards the right. Would it make it a difference to you? In what way? Why? Which one do you prefer (if any)? Why



**Table 6.26 Door hinge**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
<b>Door A (left hand)</b>	5	1	4	3	2	2	3
<b>Door B (right hand)</b>	8	3	5	7	1	3	5
<b>Does not matter</b>	11	6	5	5	5	6	5
<b>No answer</b>	1	-	1	-	1	-	1
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
<b>Door A (right hand)</b>	24	10	33.3	25	22.2	27.3	21.4
<b>Door B (left hand)</b>	28	30	26.7	37.5	11.1	18.2	35.7
<b>Does not matter</b>	44	60	33.3	31.3	55.6	54.5	35.7
<b>No answer</b>	4	-	6.7	-	11.1	-	7.1

The majority of the participants (n=11) said that the door hinge (left or right) would make no difference. It was mostly Black, male and young participants who indicated that the door hinge would not matter. Most just said it made no difference, but one participant took both left and right handed people into consideration: *“Not really, as serves both left and right handed, would choose to suit the individual”* (b, m, o). Participants who preferred the door swing to the right (Door B, n=8) made the following remarks:

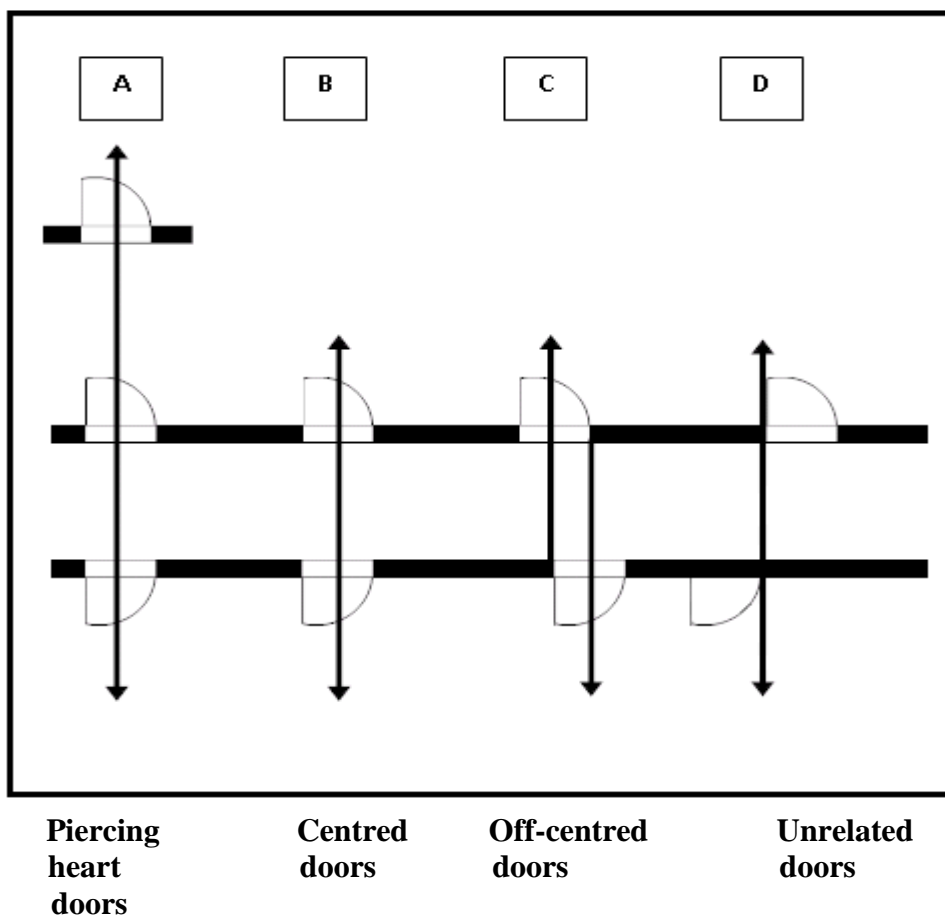
- *“Would it make a difference: Yes, it would ... opening to the right. It’s more normal. It’s the normal way that doors open.”* (w, f, y)
- *“We are conditioned that way, would make no difference, prefer B, right-hand-sided.”* (b, f, y)

Five people preferred the door swing to the left (Door A).

## Door relationship

**Principle(s) measure:** In this concept it will be established what participants' perceptions are about the four door relationships as mentioned in the previous paragraph as well as whether they perceive any of the four to be better than the other. Different door relationships can elicit different feelings depending on how sensitive and observant participants are.

**Questions:** Imagine the following corridor and different door relationships. What do you think of each and why?



The stimulus material was too complicated for some participants to visualise the various situations. With the knowledge gained in the process, it would have been better to split the four scenarios into four separate show cards. Having the four scenarios on one page added to the confusion, although the participant in the pilot interview indicated that it made comparing the scenarios easier.



**Preference for A:** n=5. It is described as straight forward, symmetrical and orderly.

**Preference for B:** n=4. A and B are seen as the same with the same reasons for preference.

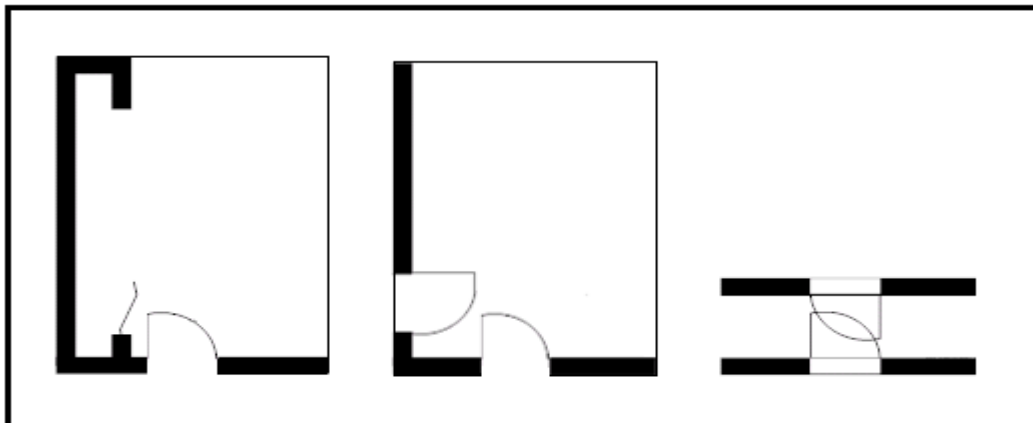
**Preference for C:** n=3. C is not preferred because participants felt there was no order, it looked uneven and confusing, the alignment was not liked and it looked complicated. The reasons for dislike for C and D were the same.

**Preference for D:** n=6. It is preferred because it is non-confrontational and it provides privacy because it is opposite each other. One participant mentioned that it creates an illusion of space.

### Conflicting doors

**Principle(s) measure:** Assessing whether doors which touch or can touch when opening are regarded as uncomfortable. This could be against the ease of flow and create discomfort.

**Questions:** Imagine the following setups and different door relationships. What do you think of each and why?



The participants from all groups had issues with all three designs and experienced all as potentially uncomfortable, as was expected. The first design was perceived to be the least intrusive and uncomfortable. The middle and last designs were received very negatively by the participants. Words like “chaos” (w, f, o) and “terrible” (w, f, o) were used to describe the layouts. Other participants described it as:

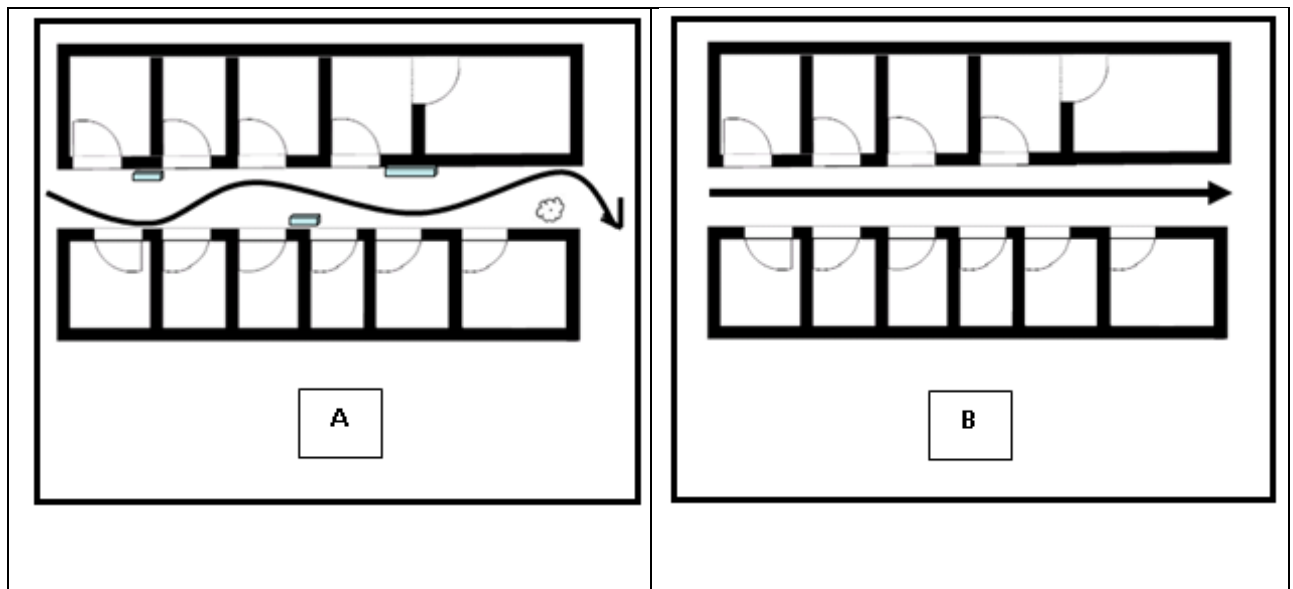
- “Not preferred, not safe, two people could bump into each other if coming out at the same time.” (b, m, y)

- *“Too close to each other, think might be an obstruction.”* (b, f, y)
- *“That’s definitely a conflict so I wouldn’t design something like that. The one door’s opening in the other door’s space, so it is intruding.”* (w, m, o)
- *“Not working.”* (b, f, o)
- *“No, that’s not really good, then people will bump into each other.”* (w, f, y)
- *“It could happen that these things could collide. Yeah, it is a bad design.”* (w, m, o)

#### 6.14. CONCEPT 13: CORRIDOR

**Principle measured:** Assessing perception regarding meandering vs. straight corridor. A meandering corridor could possibly seem to imitate nature and could therefore create a more comfortable feeling compared to a straight corridor which can possibly create a feeling which is perceived to be less comfortable.

**Questions:** Below is an illustration depicting two corridors. B is a straight corridor and A has artwork and plants to break the straight line and create a meandering feeling. Which one would make you feel more comfortable and why? Why does the other one make you feel uncomfortable?



**Table 6.27 Corridors**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
Corridor A	14	3	11	11	3	5	9
Corridor B	11	7	4	5	6	6	5
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
Corridor A	56	30	73.3	68.8	33.3	45.5	64.3
Corridor B	44	70	26.7	31.3	66.7	54.5	35.7

Fourteen participants preferred Corridor A and eleven preferred Corridor B. Corridor A was preferred because it was more interesting, aesthetically pleasing, warmer and more welcoming. Between two-thirds to three-quarters of the White/Coloured, female and older participants indicated that they preferred Corridor A. In excess of 50 percent of Black, male and younger participants preferred Corridor B. On the downside, plants etc. can obstruct the corridor. Rather put the plants and artwork in the offices. The eleven participants, who preferred Corridor B, did so mainly because one's way would not be obstructed in the corridor. It was simple and straight-forward and would increase productivity.

<p><b>Reasons for selecting A (meandering corridor)</b></p> <ul style="list-style-type: none"> <li>• <i>“More comfortable, deco, breaking the line, draws attention and create concentration.”</i> (b, f, y)</li> <li>• <i>“Because there is something for you to look at. Yeah, it will give a much warmer feeling. A much less uptight and cold office feeling.”</i> (w, f, y)</li> <li>• <i>“The best, breaks the pattern, feeling would be that there is a personality.”</i> (w, f, o)</li> <li>• <i>“Beter, interessantheid van die kuns en plante laat jou positief voel.”</i> (w, f, o)</li> <li>• <i>“A is just more appealing. Yes, A would appeal to me. Should you walk into an office building and it has got something like that it would be nice.”</i> (w, m, o)</li> <li>• <i>“A would make me feel more comfortable because there's plants and pictures and people feel relaxed immediately when the setup is not so rigid and strict.”</i> (c, f, o)</li> </ul>
<p><b>Reasons for not selecting A (meandering corridor)</b></p> <ul style="list-style-type: none"> <li>• <i>“Too much obstruction, use art and plants in office.”</i> (b, f, y)</li> </ul>

**Reasons for selecting B (straight corridor)**

- “No obstruction in my way to the offices.” (b, f, y)
- “No obstruction, can see every door, every person walking in the corridor, can always décor offices, no need to décor corridor.” (b, f, y)
- “Most comfortable, no obstruction on either sides, can’t hurt self.” (b, m, y)
- “Kantoor is vir werk.” (w, m, o)

**Reasons for not selecting B (straight corridor)**

- “Because it looks so clinical - makes one feel uncomfortable.” (w, f, y)
- “Dead, no life, hollow school hall.” (w, f, y)
- “Boring, box, monotonous, reduced to a number.” (w, f, o)
- “Too clinical, cold and unwelcoming.” (w, m, o)
- “B to me is not so great. Rigid and strict, yeah. And it can easily make the person feel nervous.” (c, f, o)
- “B is probably a standard. Nothing special, yes.” (w, m, o)

**6.15. CONCEPT 14: VIEW OF SLANTED CEILING IN RELATION TO THE SELF**

**Principle measured:** Assessing perceptions and feelings a slanted ceiling in relation to the self elicits.

**Questions:** Some people say that it can feel oppressive sitting under the lowest end of a slanted ceiling. Do you agree with this or not? Why? Why not? An illustration of a desk under the low end of a slanted roof was presented and participants were requested to indicate their feelings regarding the position.

**Table 6.28 Slanted ceiling**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
Agree	17	8	9	10	7	8	10
Disagree	8	2	6	6	2	3	5
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
Agree	68	80	60	62.5	77.8	72.7	71.4
Disagree	32	20	40	37.5	22.2	27.3	35.7

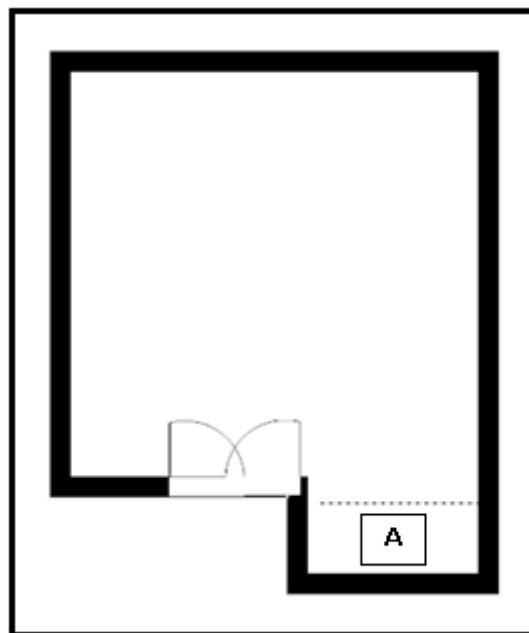
Seventeen participants agreed that it can feel oppressive to sit at the lower end of a slanted ceiling, provided that the ceiling is low. All groups agreed with this. A high slanted ceiling is not perceived to be an issue. The responses of the participants do not so much take the angle of the ceiling into consideration, but rather the height of it.

- *“Agree – you feel squeezed or squashed in, especially if you are tall, think anything can come crumbling on you as ceiling nearer my head, not safe feeling here and could make you feel uncomfortable ...”* (b, f, y)
- *“Yeah, I’ll kind of feel squashed. I’ll feel like the roof is coming down.”* (w, f, y)
- *“Agree – sinking feeling as air is not freely circulated.”* (b, m, o)
- *“Agree, don’t know, but has a feeling that could be oppressive and uncomfortable.”* (b, m, y)

#### 6.16. CONCEPT 15: DOOR WALL

**Principle measured:** Assessing the perception that a person sitting outside what can be described as the door wall, would feel excluded from the main activity.

**Questions:** There is a claim that sitting outside the door (A) will make one feel excluded from the main activity. How do you feel about it?



**Table 6.29 Door wall**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
<b>Agree</b>	14	7	7	9	5	8	6
<b>Disagree</b>	11	2	8	7	3	2	8
<b>No comment</b>	1	1	-	-	1	1	-
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Agree</b>	56	70	46.7	56.3	55.6	72.7	42.9
<b>Disagree</b>	44	20	53.3	43.8	33.3	18.2	57.1
<b>No comment</b>	4	10	-	-	11.1	9.1	-

Fourteen participants agreed and eleven disagreed that sitting outside the door would make one feel excluded from the main activity. Reasons why participants agreed, were that one will be forgotten and not included in discussions, one would feel isolated and not visible (hidden). White/Coloured and older participants disagreed that one would feel excluded.

- *“Think it’s true, feel excluded, feel isolated because not part of the crowd, sitting alone in that corner.”* (b, f, y)
- *“Yes, not part of the room, out of the room, lost space, not noticeable, when you walk in, you won’t see it, it is not in line with the door.”* (w, f, y)

Some participants indicated that they would like the privacy or even in one case the participant wanted to feel excluded: *“Wonderful. Want to feel excluded”* (w, f, o).

- *“Not excluded, have privacy, put bookshelf or desk if alone in office.”* (w, f, o)
- *“Kan nie uitgesluit voel as jy baie taak-georiënteerd is nie.”* (w, f, o)
- *“No, I won’t feel excluded, probably would feel quite nice, I don’t like to be in the middle of the room, this is more private.”* (w, m, o)

## 6.17. CONCEPT 16: *FENG SHUI* ASSERTIONS

### 6.17.1. Beams

**There is a view that...**  
 Sitting under a **beam** (with enough head space if you stand up) will feel oppressive and is not conducive to productivity.

**Table 6.30 Beams**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
<b>Agree</b>	14	5	9	10	4	8	6
<b>Disagree</b>	7	2	5	4	3	1	5
<b>If high enough, no</b>	3	2	1	1	2	1	2
<b>No comment</b>	1	1	-	-	1	-	1
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Agree</b>	56	50	60	62.5	44.4	72.7	42.9
<b>Disagree</b>	28	20	33.3	25	33.3	9.1	35.7
<b>If high enough, no</b>	12	20	6.7	6.3	22.2	9.1	14.3
<b>No comment</b>	4	10	-	-	11.1	-	7.1

The majority (n=14) of all groups agreed that sitting under a beam would feel oppressive given that there is not enough head space. Merely sitting under a beam (if there is enough head space) is not regarded as oppressive.

### 6.17.2. Sharp corners

**There is a view that...**

**Sharp corners in an office (like pillars, desks etc.) creates negative energy.**

**Table 6.31 Sharp Corners**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
<b>Agree</b>	17	5	12	11	6	7	11
<b>Disagree</b>	5	2	3	4	1	3	2
<b>No comments</b>	3	3			2	1	1
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Agree</b>	68	50	80	68.8	66.7	63.6	78.6
<b>Disagree</b>	20	20	20	25	11.1	27.3	14.3
<b>No comments</b>	12	30	-	-	22.2	9.1	7.1

The majority of the participants in all groups agreed with the statement from a safety perspective that sharp corners would cause injuries but did not agree that **sharp corners** in an office create negative energy. Some examples of what participants said in this regard are:

- “True, as they hurt due to sharpness of corners, will always have bruises.” (b, f, y)
- “Definitely. Rounded corners are much better and much safer and it gives a much warmer feeling.” (w, f, y)
- “I don’t like sharp corners in an office space, because you know what, you find you’re sitting in the bath at night and you just see you’re blue – where did I get this from? So preferably I don’t like sharp corners and sharpness is out of fashion. You must work together now, there’s no sharpness anymore. No-one must be too rigid.” (c, f, o)
- “Energy negative, don’t know about that, but sharp corners hurt.” (b, m, y)



### 6.17.3. Balancing opposites – harmony

**There is a view that...**

**Balancing** light and dark colours, soft and hard surfaces and smooth and rough textures in your choice of window treatments, furniture, and flooring and is conducive to **productivity**.

**Table 6.32 Balancing harmonies**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
<b>Agree</b>	19	8	11	15	4	10	9
<b>Disagree</b>	4	1	3	1	3	1	3
<b>No comment</b>	2	1	1		2		2
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Agree</b>	76	80	73.3	93.8	44.4	90.9	64.3
<b>Disagree</b>	16	10	20	6.3	33.3	9.1	21.4
<b>No comment</b>	8	10	6.7	-	22.2	-	14.3

The vast majority of the participants (n=19, except males at 44.4 percent) agreed with the statement that balancing e.g. colours and textures was conducive to productivity. On the one side it creates excitement and prevents dullness and on the other side balancing the various elements can bring harmony. Two of those who disagreed with the statement, disagreed with the part of the statement referring to ‘balancing opposite would increase productivity’. They did, however, feel that it would create a more pleasant, comfortable and aesthetically pleasing environment.

- “Yes, don’t believe in monotony, prefer mixture to create excitement.” (b, f, y)
- “Definitely. I think it’s good. That’s how it should be, yeah. They should have a total balanced atmosphere around you.” (w, f, y)
- “Yes. I definitely believe so. ... It definitely works if you blend them together; if you know how to work with your colours and your different textures and stuff, it definitely makes a difference in a room, like the different colours that you use work better as well.” (w, f, y)
- “It would be conducive, I would agree. You have to spend 8 hours a day in that environment, so it has to be friendly. It’s nice and friendly and it makes you feel happy maybe.” (w, m, o)
- “Think so, think bring sort of harmony when balancing.” (b, m, y)
- “Yes, I agree. Colour, texture, furniture do have an influence.” (c, f, o)
- “It should because different people respond differently to the colours and the textures, so if you mix them then you meet the needs of the majority.” (b, f, y)

Only one person (w, m, y) mentioned that uniformity increases productivity.

#### 6.17.4. Clutter

**There is a view that...**

**Clutter** in an office creates negative energy.

**Table 6.33 Clutter**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
<b>Agree</b>	23	8	15	16	7	10	13
<b>Disagree</b>	-	-	-	-	-	-	-
<b>No comment</b>	2	2	-	-	2	1	1
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Agree</b>	92	80	100	100	77.8	90.9	92.9
<b>Disagree</b>	-	-	-	-	-	-	-
<b>No comment</b>	8	20	-	-	22.2	9.1	7.1

Clutter was uniformly disliked by all groups. Order increases productivity, it helps you to keep your focus and therefore increases productivity.

- “True, cleanliness is next to godliness, order makes life easier, more productive – access.” (b, f, y)
- “It’s very true, yes. Because you can’t focus on what you’re supposed to do, like too many things distracting you.” (w, f, y)
- “Yes, not organised, cannot perform well.” (b, m, o)
- “Yeah, no, the clutter is out. Why do you have cupboards. Order. There must be. And it also says something about you as a person. If you come to my work area or even my house is like, it just gives a bad impression, I think.” (c, f, o)

Having the knowledge did not necessarily mean that one would actually follow a clutter free regime: “Ek voel so, maar gewoonlik is my kantoor ‘n clutterville. Ek en “filing” en sulke goeters” (w, m, o).

### 6.17.5. Supporting back

**There is a view that...**  
 Keeping your **back toward a corner or a wall for support** is the best seating position.

**Table 6.34 Supporting back**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
<b>Agree</b>	15	4	11	10	5	5	10
<b>Disagree</b>	6	2	4	5	1	3	3
<b>No comment</b>	4	4	-	1	3	3	1
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Agree</b>	60	40	73.3	62.5	55.6	45.5	71.4
<b>Disagree</b>	24	20	26.7	31.3	11.1	27.3	21.4
<b>No comment</b>	16	40	-	6.3	33.3	27.3	7.1

Some participants interpreted “support” in the sense of “support for your back” (i.e. ergonomically) rather than “covering your back”. The statement was therefore misinterpreted.

#### 6.17.6. Sitting in line with door

**There is a view that...**  
 Sitting **in line with the office door** is not conducive to productivity.

**Table 6.35 Sitting in line with door**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
<b>Agree</b>	19	5	14	14	5	7	12
<b>Disagree</b>	4	3	1	2	2	3	1
<b>No comment</b>	2	2	-	-	2	1	1
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Agree</b>	76	50	93.3	87.5	55.6	63.6	85.7
<b>Disagree</b>	16	30	6.7	12.5	22.2	27.3	7.1
<b>No comment</b>	8	20	-	-	22.2	9.1	7.1

The majority (n=19) of all groups agreed that sitting in line with the office door was not conducive to productivity, mainly because it would be distractive:

- *“I used to sit in front of an office door and I can tell you, it’s not conducive and then there’s also a negative point about it, is that your office door in front of you is always door, you tend to hear the conversation that everyone’s having ... You are easily disturbed, you know.” (c, f, o).*

### 6.17.7. Sitting with back to door

**There is a view that...**

**Facing away from the door in an office puts you in a vulnerable position.**

**Table 6.36 Sitting with back to door**

	All	Black	White/ Coloured	Female	Male	Young	Old
	n						
<b>Agree</b>	17	6	11	12	5	8	9
<b>Disagree</b>	6	2	4	4	2	2	4
<b>No comment</b>	2	2	-	-	2	1	1
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	%						
<b>Agree</b>	68	60	73.3	75	55.6	72.7	64.3
<b>Disagree</b>	24	20	26.7	25	22.2	18.2	28.6
<b>No comment</b>	8	20	-	-	22.2	9.1	7.1

The majority (n=17) of all groups agreed that facing away from the door would put one in a vulnerable position: “...*totally agree also. I want to see the door at all times. You don’t want people sneaking up on you from behind*” (w, f, y). Some people would prefer sitting with their backs to the door for privacy and not getting distracted: “ *this kind of just makes you concentrate a little bit more*” (w, f, y).

### 6.17.8. Looking into a corridor

**There is a view that...**

**Looking straight out into a corridor or see the stairs, storage rooms, closets, elevators, escalators or toilets is not conducive to work performance.**

**Table 6.37 Looking into a corridor**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
<b>Agree</b>	22	8	14	15	7	10	12
<b>Disagree</b>					-	-	
<b>Depends on personality</b>	1		1	1	-	-	1
<b>No comment</b>	2	2	-	-	2	1	1
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>						
<b>Agree</b>	88	80	93.3	93.8	77.8	90.9	85.7
<b>Disagree</b>	-	-	-	-	-	-	-
<b>Depends on personality</b>	4	-	6.7	6.3	-	-	7.1
<b>No comment</b>	8	20	-	-	22.2	9.1	7.1

Participants of all groups universally agreed (n=22) with the statement. They mainly see it as distracting.

- *“Very distracting, can’t be productive as people roaming around, you’ll be curious to look.”* (b, f, y)
- *“That’s true, you get lots of disturbances, people moving up and down the stairs and it can be noisy.”* (b, f, y)
- *“I would agree. Takes your mind off work, you will always focus on what is happening outside.”* (w, m, o)
- *“Possibly, if the person is easily distracted; if you’re a person that cannot focus ... then that could be a problem. But if it’s a person who is able to focus and block out the surroundings ... then it’s fine.”* (c, f, o)

### 6.17.9. Commanding position

**There is a view that...**

Sitting in the **corner furthest from the entrance** to the room facing the door is the best seating position.

**Table 6.38 Commanding position**

	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>n</b>						
<b>Agree</b>	18	6	12	13	5	9	9
<b>Disagree</b>	5	2	3	3	2	1	4
<b>No comment</b>	2	2			2	1	1
	All	Black	White/ Coloured	Female	Male	Young	Old
	<b>25</b>	<b>10</b>	<b>15</b>	<b>16</b>	<b>9</b>	<b>11</b>	<b>14</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
<b>Agree</b>	72	60	80	81.3	55.6	81.8	64.3
<b>Disagree</b>	20	20	20	18.8	22.2	9.1	28.6
<b>No comment</b>	8	20	-	-	22.2	9.1	7.1

The majority (n=18) of all groups agreed that sitting in the corner furthest from the entrance to the room facing the door is the best seating position. In excess of 50 percent of all groups agreed with the statement. White/Coloured, female and young groups especially agreed (in excess of 80 percent each).

## 6.18. CONCLUSION

In the following chapter the results presented in this chapter will be discussed, integrating the results of the in-depth interviews with the literature. The essence of the large amount of information obtained from the various sources will be extracted and discussed.

## Chapter 7

### 7. DISCUSSION

*“Everything is designed. Few things are designed well.”*  
Brian Reed

#### 7.1. INTRODUCTION

In this chapter the information summarised in the literature review and the results of the in-depth interviews are presented. In Chapters 3 and 4 the design framework and results of previous research were discussed. Where a concept was supported with evidence from both *feng shui* and the Environmental Social Sciences the assumption was made that it can be accepted as a design guideline. From Chapters 3 and 4 gaps in knowledge or contradictions were identified which were tested amongst a group of participants. In Chapter 6 the results from this research were presented. In Chapter 7 the discussion from Chapters 3, 4 as well as the results from the investigation in Chapter 6 will be reconciled and discussed.

#### 7.2. UNDERLYING DESIGN PRINCIPLES

##### 7.2.1. Soundness of *feng shui*

The purpose of the study was not to prove or disprove the validity of *feng shui*, but rather to use principles of both *feng shui* and Environmental Social Science to develop a design guideline in the South African context. As will be seen in the discussion, a large number of the *feng shui* principles were supported by the results of either Environmental Social Science studies or the results from the investigation.

A major difference between *feng shui* and Environmental Social Science is the latter’s acknowledgment of the occupants’ ability to express their needs and knowledge of what they want as part of a planning process, compared to *feng shui* where the *feng shui* practitioner is the keeper and protector of a mystic knowledge only privileged to a few. Another very important aspect from an Environmental Social Science perspective is that there is no one size fits all – designs are adapted to individual needs



or a group's needs (as a compromise). Some simplified *feng shui* design traditions (compass schools excluded) tend to be a one size fits all design solution.

### **7.2.2. Art vs. performance; People vs. building**

Both *feng shui* and Environmental Social Science put the inhabitants of the building first although, as discussed in Chapter 4, the needs of designers and users of buildings are sometimes not aligned. A building designed for the people according to their needs will not necessarily be winning prizes and get accolades, but will be a place where the users can feel comfortable and experience a sense of place.

People feel a greater connection and satisfaction with their environment if they have some control over it (even in the smallest possible way) or have some input in the design process. Both architects and designers should as part of a standard process, get stakeholder input into any building which will be designed or any space which needs to be remodelled – both pre and post-occupancy. The best way would be to follow a structured approach such as utilising Toby Israel's Design Psychology Tools (see Chapter 3) executed by an expert.

### **7.2.3. The *Dao* and the *yin* and *yang***

The *Dao* and the *yin* and *yang* are underlying philosophical concepts which are foreign to the Western philosophy, but the principle of complementary opposites (for example the Anima and Animus).

#### **7.2.4. Associations with water, wood, earth, metal and fire**

As mentioned earlier, the five elements are fundamental to any design decision in *feng shui*. These elements are not foreign to the Western way of thinking (in various combinations earth, air, fire and water are general elements included in design). The main difference is that it does not play such a central role in non-*feng shui* designs. This study did not attempt to prove or disprove the validity of using the five elements in design, but rather to answer the research questions: What are the underlying associations with each of the elements and what are the associated design elements? If a designer wants to utilise the principles, this study will give some insight into what way it can be used.

##### **Water**

Water is fundamental to our survival and symbolises life (O'Connell & Airey, 2007). One can expect that when water or aspects symbolising water are used in a design it will result in positive associations.

Water represents feelings of calmness, tranquillity, coolness and can be used in for example high stress environments where these characteristics are required. As water is also associated with refreshment of the mind and life giving properties, its use can create an atmosphere associated with life in contrast with staid and stagnant environments – as mentioned earlier water is dynamic and chaotic – never moving in a straight path (O'Connell & Airey, 2007). The use of especially the colour blue, water features, images of water in paintings or reflective or transparent material like glass or marble can be used to symbolise water.

##### **Wood**

Trees symbolise the cycle of life, health and potency with additional themes of shelter, permanence and immortality (Wilkinson [Ed], 2008, O'Connell & Airey, 2007). Wood represents elegance, luxury, stability, warmth, harmony, strength and is also a status symbol. Although not many negative things were associated with wood, it must be borne in mind that it can be seen as old or old fashioned. Wood symbols and associations can be used when the image needs to be portrayed is one of strength, stability and luxury. Such an environment will not be seen as modern, but will rather

portray an old-fashioned image. Within the context, the latter is not necessarily negative.

### **Fire**

Fire is active and masculine and has dual symbolism – on the one side it is associated with war and chaos, but on the other side it symbolises purification, regeneration, the home hearth and divine love (Wilkinson [Ed.], 2008). The fire element was very difficult for participants to convert into a design element. Colour (red and orange) would be the easiest way to incorporate the fire element into a design. Fire is an important element to include in a design as it symbolises energy, creativity, positivity and motivation. The fire element can be used to energise an environment, but care should be taken to use it sparingly, unless otherwise required by the situation.

### **Earth**

As mother earth, it symbolises sustenance, nurturing, the source of all life. It is feminine and passive (Wilkinson [Ed.], 2008). Earthy and brown colours and plants and natural material such as clay, sisal and ceramics can be used to represent earth elements in a design. Elements representing the earth element can be used to create a nurturing, calming and grounded feeling.

### **Metal**

Various metals have various symbols attached to them: gold is perfection, iron is strength and durability, silver is chastity, purity and wisdom, copper is female and healing (Wilkinson [Ed.], 2008). Any metal object can be used to represent the metal element. The metal element can be used when a professional modern look needs to be created (in contrast to the wooden element). Metal should be used in limited amounts as accents as it can create a clinical, cold atmosphere (unless this is the intention).

The above design elements are translated into the materials used in design – including the materials used in the building itself. From a *feng shui* viewpoint artificial materials are discouraged and from an Environmental Social Science perspective, certain artificial materials can cause health issues. It is unfortunately unrealistic to

only use natural materials with the overuse and depletion of natural resources<sup>35</sup>. By using certain materials, the image and feeling the various elements elicit can be supported: Wood can create a warmer atmosphere, metal and concrete can create a colder atmosphere. At the same time one should be aware of the negative feelings which can be created for example rough textures can create an uncomfortable feeling. The main principle to adhere to is, the users of a space should always be asked the question what feelings will be elicited by certain design elements and what will the effect be on them. This should always be asked within the context of the primary purpose of a space.

### **Association with industries: energy**

Also fundamental to *feng shui* is the concept of energy (*ch'i*) which is not as foreign a concept as it appears at first glance. It attempts to describe an unseen force influencing people in a way they are not aware of. It is definitely foreign to the rational Western way of thinking. Attempting to uncover/unravel the hidden or underlying way of thinking, questions were asked regarding the associations of the various elements with specific industries. What is often described in *feng shui* as negative energy or energy rushing directly towards a person was described by the participants as an uncomfortable feeling or a position they would not prefer. From this study it can be concluded that “energy” (*ch'i*) is an amorphous term used to describe either an uncomfortable (negative energy) or comfortable (positive) feeling.

There were clear associations with industries, but it is not necessarily fixed. While metal was associated with the rigidity and coldness of government, it was also associated with modernity and technology in the advertising industry. Where *feng shui* assigns a rather rigid meaning to a concept it is clear that in the South African context and from a Design Psychology perspective, association and meaning are context driven. There is an alignment between the associations with the elements and the characteristics of the industries. The associations had face validity and made

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<sup>35</sup> As an illustration, according to Winter and Koger (2004), the world population as well the consumption of the resource base are growing super-exponentially and at the same time the land available for food production has shrunk to accommodate land for residential use.

sense in terms of the motivations offered: government: metal and earth, advertising agency: fire and water, attorneys, wood and metal, fast food outlet: fire and metal, modern fusion restaurant: metal, pub and tavern: wood and industries where things happen quickly: fire.

One can only speculate to what extent the responses are reflecting what is known or what participants are used to e.g. wood is often and traditionally used in the design of attorney offices. The counter example is that wood can also be associated with the older government buildings, but metal was strongly associated with government.

### **7.2.5. Balance and harmony**

Balance and harmony are two of the cornerstones in design in general and *feng shui* principles in particular. Balance and harmony are for example illustrated by the universal design principles of the Golden Ratio, the Rule of Thirds and the Fibonacci sequence (see paragraph 4.2.12, Lidwell et al., 2003 and Lidwell et al., 2010). In the results of the interviews the majority of the participants also agreed that balancing various elements can actually increase productivity. Those who did not agree that it would increase productivity felt that it can create a more pleasant, comfortable and aesthetically pleasing environment.

Coming to the conclusion that balance and harmony are important in any design is easy, but trying to explain how one would design to achieve this is much more difficult. Getting a collective term to describe the indescribable, Sir William Temple first used the phrase *sharawaggi* in 1685 to describe the placement of a building in its proper environment implicating balance and harmony (Headley, 2008, p. 7). Expanding the meaning one can use the term to describe the placement of any object in its proper environment: “... *(i)n a sense, architecture is all about imposing order on space or in giving it an “aesthetic sense”, so to speak ... (i)t is implanted in the general principle that when things look right, they are right*” (Danesi, 2008, p. 155).

According to *feng shui* fitting a human to its environment and balancing the five elements locating them appropriately in space can result in harmony and balance. Based on the Fibonacci sequences, Le Corbusier created the *Modulor* to assist in the

achieving harmonious proportions in design (Lidwell et al., 2010, pp. 94-95). Based on the literature and the design principles one can conclude that a square or a rectangular room with proportions based on the Golden Ratio would be the most balanced and harmonious.

#### **7.2.6. Primary purpose**

Every space and area has a *primary purpose* and this should be the starting point for any design. The *primary purpose* is applicable to more than one level, namely the building itself, each individual room or area, and then again subdivisions within a space. As words only have meaning within a certain context, a design only has meaning within the context – in this case the *primary purpose*. Without this context, balance and harmony will not be achieved. The context of a private office differs vastly from the context of a boardroom. This is closely related to semiotics (see Chapter 1): the connotative meaning of a building or space only gets meaning within a certain context (Danesi, 2008). In the words of Danesi (2008):

*“Connotation is the operative meaning-making and meaning-extracting mode in the production and decipherment of most signs and texts. Connotation is not an option. ... it is something we are inclined to extract from a sign in specific contexts”* (Danesi, 2008, p. 28).

#### **7.2.7. Time**

Time can have various influences on a building and is not necessarily afforded enough attention. The time period in which a building is built will determine for example the design and technology used. Design does not only refer to the aesthetic design of the building but also to the layout such as open-plan offices which will be determined by the philosophy and design fashion of the period. Changing the use of a building from the original purpose can also have an impact. Remodelling a building by changing its function from that original intended function can lead to problems such as indoor air pollutants.

### 7.2.8. Commanding position

The concept of the commanding position was measured in a variety of concepts. In summary there are strong indications that the commanding position is confirmed in most instances. The evidence is presented below.

The general principles of the commanding position which were tested are:

- out of the direct line of the door where people can see the occupant
- full view of the room and door
- further from the door
- back positioned towards the wall i.e. a strong support behind the occupant (and not having a door or window behind one).

#### **The specific commanding position aspects**

1. Sitting in the **corner furthest from the entrance** to the room facing the door is the best seating position.  
*Consensus:* The commanding position and the prospect-refuge theories are supported.
2. Keeping your **back toward a corner or a wall for support** is the best seating position.  
*Inconclusive:* Some participants interpreted “support” in the sense of “support for your back” (i.e. ergonomically) rather than “covering your back”. The statement was therefore misinterpreted.
3. **Facing away from the door** in an office puts you in a vulnerable position.  
*Consensus:* A preference for facing the door supports previous findings in this chapter as well.
4. Sitting **in line with the office door** is not conducive to productivity.  
*Consensus:* There should be clear visibility of the door, but care should be taken that people are not positioned in line with a door.

5. **Looking straight out into a corridor** or see the **stairs, storage rooms, closets, elevators, escalators or toilets** is not conducive to work performance.  
*Consensus:* Again the principle of having a view of the door without the distraction should be considered. Areas next to high traffic or possible areas of distraction should not be used as office space.

### **Commanding position within specific scenarios/layouts**

#### **1. Lobby and reception area**

*Partial consensus:* When given a set layout with the reception desk on the right in the commanding position, the layout was preferred by the majority who could give an answer, placing the receptionist in control as she/he can see people coming into the lobby and the visitor seating area on the left.

The door behind the receptionist and the windows behind the visitors are against the principles of the commanding position, but the context and purpose of the doors or windows determine the participants' reaction. If the door leads to the receptionist's private office, participants did not have a problem with it, but if it leads to the superior's office it would be unacceptable.

*No consensus:* When given three options the majority of the participants did not select the commanding position. This of course can possibly be ascribed to the methodology used the limitations of which will be addressed in Chapter 8 under limitations.

#### **2. Boardroom (round and oval tables, one and two doors)**

Participants were more certain and fixed about seating arrangements in the case of oval tables. There was less consensus regarding the positions in the case of round tables.

*Oval tables: Consensus:* Seat selection as comfortable, preferred and the authority position were in the expected positions which confirm the commanding position.

*Round tables: Partial consensus.*

#### **3. Office layout: Shared space**

*Partial consensus:* The main criteria for selecting a desk position were easy access, a full view of the room, minimising distractions, privacy and not sitting with your back to someone. In spite of the fact that the reasons behind



the choices support the commanding position principles, some did not select a desk in the commanding position.

**4. Office layout: Single occupancy**

*Consensus:* The preferred position is in the commanding position area.

**5. Office layout: Desk positioning: Large and small office**

*Consensus:* The commanding position was selected as the preferred position.

**6. Open-plan cubicles**

*Consensus:* Given a choice the commanding position is preferred.

### **7.3. DESIGN AREAS**

#### **7.3.1. Location/environment/direction/orientation in general <sup>36</sup>**

The location of a building is equally important in both Environmental Social Science and *feng shui*. The supporting theories and models from the Environmental Social Science perspective (Orian's Savannah theory, Kaplan and Kaplan's Information Processing theory, Ulrich's Psycho-evolutionary model, Appleton's Prospect-Refuge theory and Wilson and Kelling's Broken window theory) illustrate the importance. The five animal theory (see paragraph 6.2 for a more detailed description) was not supported in this investigation. The concept did not make sense to the participants, except for possibly the balance it depicted in the visual stimuli presented.

**Location:** From both perspectives the preferred location would have one's back protected with an open view of the front. If the natural location (such as a hill) does not provide the protection at the back, other elements such as tall trees at the back can be used.

**Greenscaping:** From both perspectives a natural environment is preferred and the psychological advantages are well documented (see for example Kopec, 2006, pp. 138-139, pp. 149-150). Also as mentioned in paragraph 4.2.1, views of nature and imagery reduce stress and enhance focus and concentration (the Biophilia effect).

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<sup>36</sup> See paragraph 4.2.1

**Neighbourhood:** The neighbourhood will have a profound effect on the perception of the building, as for example set out in Wilson and Kelling's broken window theory (see Chapter 4).

### **7.3.2. Specific locations: Roads<sup>37</sup>**

The designs participants liked most were office buildings next to two way streets, (mainly because it straight and simple and easy access to and from the street, Layout A), a dead-end, (mainly because it is quiet, Layout G) and corner stands (mainly because is simple safe and accessible, Layout C). Visibility, accessibility, low noise levels, safety, privacy and easy access were the most important criteria determining preference (in other words making it user-friendly and more comfortable for the users). Layouts to avoid were:

- where the road curves away from building (mainly because of the curve in the road which is regarded as dangerous, Layout B),
- road curves towards the building (mainly because of the curve in the road which is regarded as dangerous, Layout D) and
- a Y-junction (mainly because of safety, convenience and direction issues, Layout F).

It was postulated that Layouts A, B and C would have been preferred. Based on the in-depth interviews, A and C were preferred but G was preferred instead of B.

### **7.3.3. Front of building and lobby**

The front of the building, lobby and reception area creates the first impression of a building and should therefore be well-maintained and welcoming. A building should be clearly and appropriately marked – the overall perception of a building is also influenced by effective way finding, that is the speed and efficiency one can find the building and your way in a building. The lobby area symbolises a choice in life with various doors opening up to new possibilities, which makes effective way finding

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<sup>37</sup> See paragraphs 4.2.1 and 6.3

even more important. Directional signage should be simple, easy to locate and easy to read. The signage on and in a building also has the purpose of marking defensible territory. Efficient way finding is of course not restricted to the front and the lobby area of the building.

#### **7.3.4. Reception area**

The reception area is closely linked to the lobby area and can be a shared space. It is equally important in creating a first impression. The best positioning of the receptionist would be where a balance between comfort and safety of the receptionist and comfort and ease for visitors is struck. Sometimes in design the needs for comfort and safety are in conflict and a compromise needs to be made between the two.

In both *feng shui* and Environmental Social Science a right hand bias is indicated. In the in-depth interviews the right hand bias was also supported in some cases but not consistently.

In evaluating the positioning of the receptionist the participants considered and evaluated the following aspects: preference for the right (right hand bias), the receptionist should be in control by being able to see people coming into the lobby as well as the visitors seating area on the left, easy access to what is needed by the receptionist and easy communication with visitors. They can clearly see each other and therefore clearly communicate. The setup should be such that neither visitors nor receptionist feel “watched”. The safety of the receptionist and visitors were paramount. For safety reasons, the receptionist should not be too near to the entrance but for comfort and ease for visitors, the desk should not be too far from the door. Being too open will also create a feeling of being exposed. It was mainly older participants and females who felt that the receptionist would feel unsafe.

A door behind the receptionist and a window behind the visitors should, from a *feng shui* perspective, result in a feeling of discomfort or a lack of safety. Merely having a door or window behind your back would not make a person feel uncomfortable or unsafe – all will depend on the context and purpose of the door or window. Quite a

substantial number of participants felt that the door would make the receptionist feel uncomfortable. If the door is private no feelings of discomfort are foreseen, but if one does not know what is going on behind you it can cause discomfort. It can also provide an escape route - therefore not feeling trapped. The window behind the visitors is seen as positive – providing light and fresh air. Feeling exposed by people looking in can be a negative.

Although the above-mentioned results supported the right hand bias, it was not supported in a follow-up question (see paragraph 6.4). As mentioned earlier, in both *feng shui* and Environmental Social Science the best position for the receptionist would be where the receptionist is to the right, but surprisingly in this instance participants preferred the receptionist in front of the door with the reception desk on the right hand side a second choice. It does not follow the right hand bias or the *feng shui* principle, but it does support the principle of improving way finding and therefore making the layout of an area easier for the user.

The approaches in the two questions differed. In the first an illustration of a setup was provided and the participants were asked questions regarding this setup. In this scenario when asked what they thought about the reception desk to the right, the majority of the participants indicated a preference for the right. In the second three different setups were provided – the reception desk to the right, in the middle and to the left. Participants were asked to indicate which one they prefer and the majority preferred the desk in the middle.

### **7.3.5. The boardroom**

Participants preferred positions where they can have a clear view of the room: of everybody at the table and preferably of the door as well (see also Commanding position, paragraph 7.2.8). This is also supported by the prospect-refuge theory. One or two doors did make a substantial difference in selecting various positions at the tables. Sitting with your back to a door was less important than having a good view of the table. The person in authority will be at the head of the table with a clear view of everybody. The most uncomfortable positions were those next to authority and

positions without a clear view of others at the table and the door (and therefore not the commanding position). The reasons for selecting these positions were similar with the round and oval tables as well as the two door setup. There was greater consensus regarding the oval table's positions than the round table. This supports the supposition that a round table is more conducive to discussion between equals and less conducive to asserting authority.

The two table forms presented to the participants were oval and round table forms. Rectangular tables have a clear position of authority, namely the position at the top end. There was less consensus in selecting preferred or authoritative positions for round shapes compared to oval shapes.

#### **7.3.6. Boardroom table form**

Oval and round tables were regarded by the majority of participants as more **conducive to discussion** and more **comfortable**. Round tables would preferably be for a smaller group and also a more informal interaction. An oval table would be best for a larger group. These two table forms fit in with the modern office design theories as it assists in more equal and less hierarchical interactions (which is in contrast to the *feng shui* approach of status markers). A rectangular table is regarded as colder and more authoritative. There are indications that the standard rectangular boardroom tables are therefore not necessarily the most conducive to interaction.

#### **7.3.7. Communal staff areas**

Communal staff areas are places to relax and also portray a message of how staff is valued in an organisation and includes areas such as cafeterias and gymnasiums. Communal staff areas not only provide places where staff can relax, but also where they can interact informally, network and build relationships across departments and divisions. Overall it contributes to improved well-being. These areas are becoming increasingly important and organisations are becoming willing to invest more in it, because of the benefits and have the seventh strongest effect on work performance and job satisfaction.

### **7.3.8. Private office space**

#### **Office layout: Multiple occupants: Shared space**

Sharing space entails compromises and the trade-off of benefits. In the in-depth interviews the main criteria for selecting a seating position in a shared office space, were easy access, a full view of the room, minimising distractions, privacy and not sitting with your back to someone. Overall easy access and having a full view of the room were regarded as the most important factors. It depended on the participant's self-reported preferences which aspect was the overriding factor. Some participants would not mind sitting with their back to the room or facing the wall, as long as they have privacy. They mentioned that they are electing positions where they would not to be disturbed. Other participants would feel very threatened and uncomfortable with their backs to others and not having a good view of the room. From the in-depth interviews the desk which can be regarded as the one in the commanding position was only the third choice and there was little consensus between and within groups. The other two selected positions which supported elements of the commanding position. The reasons for this cannot be concluded from this study and trying to explain it would be speculative. Possibly compromises and trade-offs played a role in participants' choices, maybe the need for privacy or not to be disturbed were more important than being in the commanding position.

#### **Office layout: Single occupancy**

There was more consensus in the selection of the layout in a single occupancy office. With a few exceptions, participants spontaneously indicated their preferred position to be in the commanding position range. In single occupancy offices there is no need to compromise and make provision for other occupants like in a multiple occupant office.

#### **Office layout: Open-plan cubicles**

If given a choice, an open-plan setup with a view of the entrance and with one's back covered would be preferred. This is again supporting the commanding position as well as the prospect-refuge theory. Privacy can be promoted through partitions which

are at least 1.7m high (Charles, Danforth, Veitch, Zwierzchowski, Johnson & Pero, 2004).

Open-plan offices are a reality with the accompanying challenges of which noise is not the least (see paragraph 7.3.13). According to Charles et al. (2004) the majority of US workers now work in open-plan offices. According to Brill et al. (2002), the ability to do distraction free work is the workplace quality with the strongest effect on work performance and job satisfaction. Various publications such as Charles et al. (2004) and Brill et al. (2002) can be consulted regarding guidelines to control acoustics in an open-plan office.

#### **Office layout: Desk positioning: Large and small offices**

Participants from all subgroups preferred not to sit straight in line with the door, although they would like to face the door. Again the commanding position was selected as the preferred position. This applied to both small and large office spaces. Where other people (in this case visitors) are included in a setup in the case of large office spaces, the design should support communication by making it easy for all parties involved.

## **7.4. DESIGN ELEMENTS**

### **7.4.1. Doors**

Doors afford the greatest degree of territorial control (contrast to open-plan offices and cubicles where the greatest opportunity for infringement is afforded). A doorway symbolises the transition into another world, (for example another room) and therefore should provide a seamless and easy transition. The door and the way it is positioned and its size play an important role the perception of the building and the organisation. Entrance doors are larger than normal and should be accessible to people with limited mobility as well for example double doors with trigger sensors.

### **Door swing**

A door opening towards the inside is by far the better option. Participants preferred it and it also goes with the natural flow and makes people feel more welcome.

### **Door hinge**

Whether a door opens towards the left or right (door hinge) is not important. Opening the door towards a wall is, however, important. If a decision needs to be made whether the door should open towards the left or the right, it is preferable to select opening to the right as it supports the right hand bias.

### **Door relationship**

Participants were more or less split between centred and unrelated doors. From a *feng shui* perspective it was expected that unrelated doors would be the most preferred (that is a door where one is not able to see another door or part of another door).

### **Conflicting doors**

Taking care not to have door conflicts will improve users' positive experience of an environment.

## **7.4.2. Corridor**

In *feng shui* and Environmental Social Science a straight and long corridor is discouraged. From both sides the placement of an object along the corridor, changing colour schemes or modifying corridor widths can create a meandering corridor and make the corridor look shorter. Results from the in-depth interviews indicated that more participants preferred the meandering feeling of Corridor A and that it can create a more interesting, aesthetically pleasing, warmer and welcoming atmosphere. Care should be taken that the meandering layout is subtle and not obstructing the walking area. The meandering feeling can add to the positive experience of an office environment.



#### **7.4.3. View of slanted ceiling in relation to the self**

From a *feng shui* perspective sitting under a slanted ceiling, a ceiling with a rough texture and low ceiling can create a feeling of discomfort and in some instances the impression that the ceiling is lower than it actually is. From an Environmental Social Science perspective a higher than usual ceiling is preferred which is either flat or sloping. The results from the in-depth interviews indicated that as long as the lowest point of the ceiling was high enough, participants did not have a problem with a slanted ceiling. A lower ceiling (within limits) can actually be the best in certain situations (such as an operating theatre in a hospital).

#### **7.4.4. Staircase**

Studies done on staircases mostly address safety aspects (for example by the USA National Institute for Safety and Technology) (see <http://www.nist.gov>) or how to increase the use of stairs compared to elevators (see for example Olander & Eves, 2011). Staircase design details such as colour can be used to make it more interesting. This can assist in making a staircase environment more attractive for use and at least not deter people from using it. Any design detail has to take safety into account.

#### **7.4.5. Door wall**

The *feng shui* assertion was tested that somebody sitting outside the door wall will feel excluded. The conclusion from the in-depth interviews are that people want a sense of belonging and care should be taken not to make them feel excluded from main activities.

#### **7.4.6. Beams**

The *feng shui* assertion is that sitting under a beam (with enough head space if you stand up) feels oppressive and cannot be conducive to productivity. Based on the in-depth interviews the conclusion can be drawn that if a design includes beams, care

should be taken that it is high enough to provide enough space above the heads of occupants. The principle for evaluation is the same as with ceiling height.

#### **7.4.7. Sharp corners**

The *feng shui* assertion that sharp corners in the office be regarded as creating negative energy was tested. Based on the in-depth interviews the conclusion can be drawn that sharp corners should be avoided in building and furniture design to prevent injuries (participants did not agree that **sharp corners** in an office create negative energy). The majority of the participants agreed with the statement from a safety perspective that sharp corners would cause injuries. This principle was also supported by the selection of rounded table corners (see paragraph 6.11). Rounded corners should be the norm in design. This creates a safer and more comfortable environment to work in. As mentioned in paragraph 4.2.5 rounded forms created a softer and more inviting atmosphere.

#### **7.4.8. Clutter**

Any *feng shui* based design would discourage clutter. From an Environmental Social Science perspective, clutter is described more in terms of personalisation of space. The participants in the in-depth interviews unanimously disliked clutter. Care should, however, be taken not to enforce a clinical environment.

#### **7.4.9. Lighting and windows**

Natural light is equally important to both Environmental Social Science and *feng shui*. Windows, and specifically windows with a view of nature have a restorative value and decreases stress levels and has a positive effect on well-being and work satisfaction. Both Environmental Social Science and *feng shui* are also equally negative regarding the role of fluorescent lighting in contributing to an unhealthy environment and sick building syndrome. Glare caused by windows and lights can have an equally negative effect and should be prevented as far as possible.

#### **7.4.10. Colour**

The different effects of different colours on humans have been well researched and documented as illustrated for example by Kopec (2006). In *feng shui* colours are aligned with the five elements and are also divided in *yin* (calming – cool colours) and *yang* colours (energising – warm colours) and should always support the *primary purpose* of an area. The ideal colour arrangement also simulates nature with the lightest colour on the ceiling, intermediate colours on the walls and the darkest colours on the floor. According to Environmental Social Sciences warm and cool colours have similar energising and calming effects. Different colour hues can be used to create different atmospheres for example according to Weinschenk (2011) orange is useful in fast food restaurants as it makes people agitated and not linger.

#### **7.4.11. Sound**

From both a *feng shui* and Environmental Social Science perspective, noise can have a negative effect on the optimal functioning of office occupants. Environmental Social Science gives much attention to the reduction, avoidance or prevention of noise for example changing room sizes, introducing noise absorbing materials and reducing internal and external noise sources. *Feng shui* gives more attention to the introduction of calming and healing sounds such as wind chimes and water.

#### **7.4.12. Air conditioning, electrical and electronic equipment**

From both a *feng shui* and Environmental Social Science perspective air conditioning can have a negative effect on office occupants. One study found that absenteeism is less in naturally ventilated buildings and where indoor air quality is bad, the overall building satisfaction is low. From a *feng shui* point of view air conditioning is an unnatural element and therefore regarded as not preferable in design. However, being able to control air conditioning means control over the environment which can have an overall positive effect on environmental and job satisfaction.

Air conditioning, electrical and technological equipment such as the contamination caused by photocopying machines can also in some instances contribute to sick building syndrome.

#### **7.4.13. Other elements**

##### **Plants and water**

The restorative effect of plants and water is acknowledged by both *feng shui* and Environmental Social Sciences and the use supported by both. People actually avoid spaces devoid of greenery and the use of indoor atriums can increase worker's positive perception of spaces. Natural features, green areas, open spaces with pathways and water features are universally liked.

##### **Artworks and mirrors**

Artworks can be used to support the *primary purpose*, support the needs and image to be portrayed as well as a means of personalisation by employees.

##### **Furniture design**

Furniture design is closely linked to ergonomics. The three most important factors in ergonomics are stability, clearance and support. The use of smooth and simple lines increases a feeling of safety enabling people to move freely. It also creates a positive perception of a space.

### **7.5. DIFFERENCES BETWEEN SUBGROUPS**

Of the 53 design aspects discussed in the interviews (excluding the two concepts which were misinterpreted), there was group consensus on 37 concepts and 3 concepts with the same top preferences, although the order differed between groups. In total, there was consensus between the various demographic groups on three quarters of the concepts.

Where differences occurred, it was mostly **White/Coloured, male and older** participants differing from other groups. White/Coloured and male participants differed on 13 concepts each and older participants on 11 concepts from other groups.

White/Coloured and older participants were more concerned about reducing noise, minimising distractions, securing privacy and personal space.

Female and older participants were more concerned about safety.

**Table 7.1 Summary of difference between demographic groups**

<b>Concept</b>	<b>Group comparison</b>
<b>Road layout</b>	
<b>Road layout: Design A (office building next to a two way street)</b>	<b>Consensus</b> between groups (like), White/Coloured groups at a lower level of preference.
<b>Road layout: Design B (road curves away from the building)</b>	<b>No consensus</b> between groups. White/Coloured, male and older groups disliked it less.
<b>Road layout: Design C (corner stand)</b>	<b>No consensus</b> between groups. White/Coloured liked it less and older participants disliked it.
<b>Road layout: Design D (road curves towards building)</b>	<b>Consensus</b> between groups (dislike).
<b>Road layout: Design E (T-junction)</b>	<b>No consensus</b> between groups, even within groups there were no clear patterns.
<b>Road layout: Design F (Y-junction)</b>	<b>Consensus</b> between groups (dislike). Dislike levels relatively low, indifferent levels relatively high.
<b>Road layout: Design G (dead-end)</b>	<b>Consensus</b> between groups (like).
<b>Road layout: Design H (one-way)</b>	<b>Consensus</b> between groups (dislike), with males at a lower level of dislike.
<b>Road layout: Design I (traffic circle)</b>	<b>No consensus</b> between groups. Overall disliked. Dislike levels relatively low, like levels relatively high.
<b>Reception area</b>	
<b>Reception desk to the right</b>	<b>Consensus</b> between groups. All agreed to reception desk on right, males' agreement at lower percentage.
<b>Visitor's seating to the left</b>	<b>Consensus</b> between groups. The majority of those who could give an answer in <b>all groups</b> , agreed with the visitor's area on the left.
<b>Perceptions of receptionist feeling safe and comfortable</b>	<b>No consensus</b> between groups. More White/Coloured, male and young participants felt that the receptionist would feel safe. Also without a majority, more females and older participants indicated that the receptionist would not feel safe.
<b>Perceptions of having door behind the receptionist</b>	<b>No consensus</b> between groups. Males in particular (to a lesser extent White/Coloured participants) did not have a problem with the door to the back of the receptionist.
<b>Visitors in general would feel comfortable and safe</b>	<b>Consensus</b> between groups that visitors feel comfortable and safe.
<b>Window behind the visitors' seating.</b>	<b>Consensus</b> between groups that window behind visitors would not matter.
<b>Would visitors feel comfortable, safe?</b>	<b>Consensus</b> between groups. The majority of the participants who could give an answer felt that the visitors would feel safe.
<b>Window at back of visitors' chairs</b>	<b>Consensus</b> between groups. The majority of the participants (twelve) who were able to give a response did not have a problem with the window at the back of the visitors.
<b>Reception area preferences</b>	<b>Consensus</b> (Layout C, desk in line of door) except Black participants (preference for Layout A, desk to the right).

**Table 7.2 Summary of difference between demographic groups (continued)**

<b>Concept</b>	<b>Group comparison</b>
<b>Boardroom oval</b>	
<b>Boardroom: (two doors, oval): Most comfortable position</b>	<b>Some consensus</b> between groups. All groups selected Positions 1, 4 or 7. Levels of preference differed between groups. White/Coloured and older participants selected Position 4 the first choice and Position 1 the second choice.
<b>Boardroom: (two doors, oval): Most uncomfortable</b>	<b>Consensus</b> between groups. All groups selected Positions 1 and 7.
<b>Boardroom: (two doors, oval): Position of authority</b>	<b>Consensus</b> between groups. All groups selected Positions 1 or 7.
<b>Boardroom: (oval, 1 door): Most comfortable position</b>	<b>Some consensus</b> between groups. All groups selected Positions 7, 4 or 10. Levels of preference differed between groups. White/Coloured, male and older participants had less of a preference for Position 7. Especially White/Coloured and older participants preferred Position 4.
<b>Boardroom: (oval, 1 door): Most uncomfortable</b>	<b>Some consensus.</b> All groups selected Positions 12 or 2. Levels of preference differed between groups. Males were more likely to select Position 2 as the most uncomfortable.
<b>Boardroom: (oval, 1 door): Position of authority</b>	<b>Consensus</b> between groups. All groups selected Positions 1 or 7.
<b>Boardroom round</b>	
<b>Boardroom: (round, two doors): Most comfortable position</b>	<b>No consensus</b> between groups. Position 3 was selected by White/Coloured, female and young participants. Position 7 selected by Blacks, Positions 5 and 1 by males and Position 3 and 2 by older participants.
<b>Boardroom: (round, two doors): Most uncomfortable</b>	<b>No consensus</b> between groups. Position 8 was selected by White/Coloured, male and young participants, Position 7 and 8 by Black and female participants and Position 7 by older participants.
<b>Boardroom: (round, two doors): Position of authority</b>	<b>Consensus</b> between groups. All groups selected Positions 1 and 3.
<b>Boardroom: (round, one door): Most comfortable position</b>	<b>Consensus</b> between groups. All groups selected Positions 1, 5 or 7, mainly because there is a view of the door. Eight participants regarded Diagrammes A and B as the same – in other words the number of doors would not make any difference.
<b>Boardroom: (round, one door): Most uncomfortable</b>	<b>Consensus</b> between groups. The most uncomfortable was Position 8 mainly because you would sit with your back towards the door or screen.
<b>Boardroom: (round, one door): Position of authority</b>	<b>Consensus</b> between groups. All groups selected Positions 1, 3 or 5 because the person will have a view of the door and can see everybody.
<b>Table form</b>	
<b>Table to be more conducive to discussion</b>	<b>Consensus</b> between groups. The oval table (Diagramme A) was selected by the majority of all groups as more conducive to discussion.
<b>Table that would make you feel most comfortable</b>	<b>Consensus</b> between groups. The oval table (Diagramme A) was selected by the majority of all groups as more comfortable.

**Table 7.2 Summary of difference between demographic groups (continued)**

<b>Concept</b>	<b>Group comparison</b>
<b>Office layout</b>	
<b>Multiple occupants: Shared space: Seating preference</b>	<b>No consensus</b> between groups. Fifty percent or more of the White/Coloured, female and older groups preferred Position 9. Black participants mostly preferred Positions 4 and 8, male participants preferred Positions 8 and 6 and younger participants preferred Position 8.
<b>Office layout: Single occupants, large office</b>	<b>No consensus</b> between groups. Black, male and young participants had the highest preference for Setup A.
<b>Office layout: Single occupants: own layout</b>	<b>Consensus</b> between groups in selecting an option in the commanding position. Two to four participants per group indicated a position which would not be regarded as a commanding position with older and White/Coloured participants with the highest number indicating a non-commanding position (4 each) compared to the other groups.
<b>Office layout: Single occupants, small office</b>	<b>Consensus</b> between groups. More than half of the participants in all groups preferred Setup A with older participants the highest preference and younger participants the lowest preference.
<b>Open office setups preference</b>	<b>Consensus</b> (preference for Diagramme F) except black participants (preference for Diagramme A).
<b>Open office setups disliked</b>	<b>Consensus</b> between groups. Diagramme D was most disliked (n=15) by all groups.
<b>Desk corners</b>	<b>Consensus</b> between groups. The vast majority of participants from all groups selected the rounded corner options B or D.
<b>Door designs</b>	
<b>Door swing</b>	<b>Consensus</b> between groups. All groups preferred a door that would open towards the inside with six preferring the door to open towards the outside.
<b>Door hinge</b>	<b>No consensus</b> between groups. The majority of the participants (n=11) said that the door hinge (left or right) would make no difference. It was mostly Black, male and young participants who indicated that the door hinge would not matter.
<b>Door relationship</b>	<i>Too complicated for some participants to visualise.</i>
<b>Conflicting doors</b>	<b>Consensus</b> between groups. The participants from all groups had issues with all three designs and experienced all as potentially uncomfortable as was expected.

**Table 7.2 Summary of difference between demographic groups (continued)**

<b>Concept</b>	<b>Group comparison</b>
<b>Other elements</b>	
<b>Corridor</b>	<b>No consensus</b> between groups. The majority of White/Coloured, female and older participants preferred Corridor A (meandering) and the majority of Black, male and young participants Corridor B (straight).
<b>Slanted ceiling</b>	<b>Consensus</b> between groups. A high slanted ceiling is not perceived to be an issue. The responses of the participants do not so much take the angle of the ceiling into consideration, but rather the height of it.
<b>Door wall</b>	<b>No consensus</b> between groups. Opinion divided whether sitting outside the door would make one feel excluded from the main activity. Especially White/Coloured and older participants would not feel excluded.
<b>Beams</b>	<b>Consensus</b> between groups. Merely sitting under a beam (if there is enough head space) is not regarded as oppressive.
<b>Sharp corners</b>	<b>Consensus</b> between groups that sharp corners would cause injuries but not that sharp corners in an office create negative energy.
<b>Balancing opposites – harmony</b>	<b>Consensus</b> between groups that balancing for example colours and textures was conducive to productivity. Males were at a lower level of agreement.
<b>Clutter</b>	<b>Consensus</b> between groups that clutter is distracting. Lack of clutter helps to keep focus and the result can therefore increase productivity.
<b>Supporting back</b>	<i>The statement was misinterpreted.</i>
<b>Sitting in line with door</b>	<b>Consensus</b> between groups that sitting in line with the office door was not conducive to productivity, mainly because it would be distractive.
<b>Sitting with back to door</b>	<b>Consensus</b> between groups, that facing away from the door would put one in a vulnerable position.
<b>Looking into corridor</b>	<b>Consensus</b> between groups, that looking into a corridor can be distracting.
<b>Commanding position (in general)</b>	<b>Consensus</b> between groups, sitting in the corner furthest from the entrance to the room facing the door is the best seating position.

## 7.6. SUMMARY

In this chapter the information from the literature and the in-depth interviews were discussed according to the design elements as set out in the literature review and the information obtained in the interviews. The reaction according to the various subgroups was also discussed – whether there is consensus or not between the subgroups. In the concluding chapter the results will be discussed, answering the research questions as was set out in Chapter 1



## Chapter 8

### 8. CONCLUSIONS

*“What meets the eye is never quite what it seems.”*

Smith, 1994, p. 290.

#### 8.1. INTRODUCTION

Design Psychology follows a user centred design approach. According to Jesse James Garrett (a user experience designer) “... *(u)ser-centered design means understanding what your users need, how they think, and how they behave - and incorporating that understanding into every aspect of your process*”. (<http://www.adaptivepath.com/>). These can be done in a variety of user needs assessments for example Predesign Research (PDR) (prior to occupancy), occupancy evaluation (during occupancy) and post-occupancy evaluation (POE) (Kopec, 2006). Kopec (2006) continues that for an effective design, pre- and post-occupancy evaluation needs to be done and if an occupancy evaluation of a comparable setting can be done, it would be even better.

It is an understatement to say that researching people’s design preferences is complicated. In the words of Michelson (1990, p. 346) the researcher is faced with the reality that the data and information we work with are “*an abstraction from the reality in which respondents live*”. The Exposure Effect postulates that familiarity plays an important role in aesthetic appeal and acceptance. People would like things more if they are regularly and frequently exposed to them (Lidwell et al., 2010, p. 86). Lidwell et al. (2010) give examples such as the Guggenheim Museum (architect/designer Frank Lloyd Wright), the Eiffel Tower (architect/designer Gustave Eiffel) and the Vietnam Veterans Memorial (architect/designer Maya Lin) which were all met with initial resistance and are now recognised as icons and accepted as beautiful and brilliant.

The Exposure Effect can also be part of the reason why the designer-user conflict exists – maybe designers/architects feel that given enough exposure, users will appreciate their designs and that they actually are the keepers of high culture and know better? In the words of Steve Jobs (Apple co-founder) who was quite sceptical about consulting users when developing products: “... *(a) lot of times, people don’t know what they want until you show it to them*”. Barriers should be pushed, but in

progressive design, as Israel (2003) mentions, the comfort of the known and the equilibrium between the familiar and unfamiliar should be maintained without overwhelming or diminishing the users.

*“We will always need planners, architects and policymakers to develop ideas, designs and initiatives, and to create, inspire and challenge. Yet their role also must be to inform rather than to specify, to arbitrate rather than to impose, and to offer options rather than prescriptions. In this way we will create environments for the well-being of all”* (Halpern, 1995, p. 213).

The study of the field is complicated by the multitude of factors which could play a role. The effect of the physical environment is *inter alia* influenced by perceptions, beliefs, preference, experiences, personality (Kopec, 2006, p. 7), mental models and the socio-cultural environment. To complicate matters further, it is not easy to measure or evaluate the physical environment. Israel (2003, p. 161) calls it the *“unlabelled experience of place that resonates as poetry without words”* which in itself creates a challenge to operationalize and measure.

According to Obata (1987, p. 59) workplace design becomes successful when there is a fit between the organisation and the working environment. Aesthetics are important in the sense that it must support the values and mission of the organisation and must be rooted in practical needs. Aesthetics must never be the overriding aspect, but must grow from the surroundings, the organisational culture and company history. Aesthetics and efficiency are not mutually exclusive but should be used in conjunction to create environments which will be good for people.

Buildings such as office buildings which are used by a variety of people from heterogeneous backgrounds and personalities are of course much more complicated to design. According to Obata (1987) the *“collective personality”* of a building’s users should guide the design. He does not attempt to indicate how the *“collective personality”* should be determined. Israel (2003) structures a process of obtaining user input into the design process with her Design Psychology Tools and process (described in Chapter 2).

Over time many authors gave some general architectural and interior design pointers and guidelines. Some of these are (Appleton, 1975a; Keedwell, n.d.):

1. Be aware of what constitutes psychological healthy spaces.
2. Take universal need and principles into consideration, but allow for individual, cultural and subcultural differences.
3. Use objective measures to determine what are psychologically healthy buildings and not own subjective script.
4. If one cannot design the ideal psychologically healthy space, try to minimise harm as much as possible by understanding how meaning is given to place and space.
5. In understanding the field and how place and space is given the meaning one should take the following into consideration:
  - Learn from other disciplines – inter-disciplinary approach
  - Seek information beyond peer reviewed journals
6. Use imagination and creativity in design.

The so called *New Office* (see Chapter 2) is not always effective “*anything anywhere*” often becomes “*nothing, nowhere*” (Bjerrum and Bødker, 2003, p. 216) and in some instances the *New Office* does not support Design Psychology principles (see also Chapter 2). Bjerrum and Bødker (2003, pp. 215-217) are of the opinion that learning and communication are inhibited and the new office “*leads to conformity and anonymity rather than co-operation and creativity*”.

In a report by Allen, Bell, Graham, Hardy and Swaffer (2004) “*Working Without Walls: An Insight into the Transforming Government Workplace*” a project to redesign the UK Government's Office of Government Commerce by DEGW (a strategic consultancy firm) is described and can be used as an example of going against many principles discussed in this study. In Table 8.1, the DEGW design project principles are compared with Design Psychology principles.

**Table 8.1 Comparison of New Office design and Design Psychology principles**

Workplace principles and standards as set out in the DEGW project *	Comments from a Design Psychology perspective
<ul style="list-style-type: none"> <li>Space allocated by individual and not status</li> </ul>	<ul style="list-style-type: none"> <li>Against human need for status markers: status markers suited to rank and occupation should be provided. People use clues such as status markers to make sense of their environment and interpret it.</li> </ul>
<ul style="list-style-type: none"> <li>No storage on desk/clear work space</li> </ul>	<ul style="list-style-type: none"> <li>Clutter is discouraged, but not being able to customise and personalise can result in a lack of sense of place or belonging.</li> </ul>
<p>Reduce storage practices</p> <ul style="list-style-type: none"> <li>Minimal personal storage</li> <li>Grouped, project or team storage</li> </ul>	<ul style="list-style-type: none"> <li>Given that proper alternatives exist such as paperless environment. In other words, the environment must support task requirements.</li> </ul>
<ul style="list-style-type: none"> <li>Allocation of space for desks is reduced</li> <li>Higher proportion of shared <b>support space</b>/emphasis on sharing and not owning facilities</li> </ul>	<ul style="list-style-type: none"> <li>As long as (as mentioned earlier) the space saved on individual offices is not used for extra communal areas.</li> <li>Consider boundaries (defensible space).</li> <li>Personalisation would be difficult which is important in creating a sense of belonging.</li> </ul>
<ul style="list-style-type: none"> <li><b>Desks</b> shared, not owned/office available for use but not owned</li> <li>Increased utilisation of workspace</li> <li>Range of alternative work settings</li> </ul>	<ul style="list-style-type: none"> <li>Consider boundaries (defensible space).</li> <li>Personalisation would be difficult which is important in creating a sense of belonging.</li> <li>Generic solutions should be avoided; design and furnishing should support job requirements.</li> </ul>
<ul style="list-style-type: none"> <li>Employees empowered to work cross locations/ exploitation of new technologies</li> </ul>	<ul style="list-style-type: none"> <li>Social interaction at work is an important factor in job satisfaction and one can expect less cohesive work relationships.</li> <li>New technologies provide alternatives, addressing individual needs.</li> </ul>

\* Allen et al. (2004)

## 8.2. DESIGN IMPLICATIONS (WHAT CONSTITUTES GOOD DESIGN?)

### 8.2.1. Research question 1: Which design principles can enhance the well-being of office workers?

#### Overall

There are a few critical take-outs from the literature and research. Firstly there is no one size fits all solution. One can create a very valuable framework for design which can be used as a broad framework within which the design and planning can take place, but the individual or a group's needs can never be ignored. People and groups react differently to different environmental factors and stimuli e.g. privacy, noise. It has been illustrated many times in this document that people's individual needs differ and that satisfaction increases with **involvement** in the design and planning process. The design process and its outcome, is more satisfactory if individual and group differences and needs are taken into account (Cassidy, 1997). Involvement in the planning process also plays a very important part in feeling a sense of **control**.

Another important aspect is the interconnectedness of various factors, human and environmental. Changing one variable in a **system** will affect other variables in that system and can have a knock-on effect on other systems. Designers should not only consider particular elements of a design, but also their relation to the design as a whole and the greater environment. The **primary purpose** of all design areas at all stages should be taken into consideration – from selecting a location up to designing a specific area. This should determine the design strategy.

A number of implications for designers can be deduced from the literature (specifically Halpern, 1995, McCoy, 2002) and the results from this study. The implications are grouped according to Israel's Needs model (see Chapter 2).

#### Shelter and security

1. Measures put in place to make environments safer can actually be aesthetically displeasing and not be the optimal design. Designers need to be aware of the tension between the need for safety and security and aesthetical pleasing designs. As seen earlier according to the needs model of both Lidwell et al.

(2010) and Israel (2003), safety and security is a basic need and must be addressed in order to progress to higher level needs. This is a particular challenge in South Africa where threat to safety and security is a reality and poses a particular challenge to architects, designers and Design Psychologists.

2. In designing the workplace, architects and designers should draw on the large body of research to control the ambient aspects of the workplace. Available research ranges from factors associated with sick building syndrome, ergonomics and design preferences to theories such as the Prospect Refuge theory.
3. The number of complaints is not an indication of the level of the negative impact of an environmental stressor. Many complaints can be received about an aspect which will not have a negative impact, but also few complaints can be received about a stressor which can have a negative impact. This means that only a few complaints should be taken note of.

#### **Task instrumentality**

4. The environment must be adaptable and responsive to changes in the team and the organisation. Required changes need to be accommodated quickly and without disruption.
5. The environment must support and facilitate task completion. For example the layout must support formal communication. If a paperless environment is required the necessary systems must be in place, workspaces must be of adequate size, the necessary communication and information technologies need to be provided.

#### **Symbolic identification**

6. A good design principle in one culture will not necessarily be a good design principle in another culture.
7. The symbolic effect of an environment can have the result that organisations and buildings can be labelled and in similar ways can become self-fulfilling

prophesies e.g., if a building becomes known as a sick building, employees can react accordingly.

8. The physical environment reflects the company's identity. All design elements can be used to communicate an identity – decorative styles, location of offices, allocation of space and layout, boundaries between the system and the outside world, signs, colour, artwork, available amenities and access to it.
9. Being able to control one's environment implies that occupants should be involved in the management and planning of the environment and therefore influence it as well as being able to exert direct control over the environment when using office space by for example being able to control air-conditioning or personalising a workspace. Not being able to have a say or input in the planning or design of the physical work environment, can lead to negative attitudes and emotions and will also negatively impact on identification.
10. Occupants need to relate to a design. If the occupants do not relate to the design and its underlying principles, it can result in a feeling of disconnectedness and a decrease in satisfaction.
11. Environmental satisfaction, job satisfaction and well-being increases when employees are permitted to personalise their workstation.
12. Designs that match employees' expectation for their positions will increase satisfaction with the built environment.

### **Social contact**

13. The physical layout influences social interaction and group formation in the workplace (see Chapter 2). The implications for the workplace are:
  - a) Workers in close proximity will more likely form a cohesive group.
  - b) Group formation is facilitated by physical or symbolic enclosure.
14. Supportive behaviour will be the highest within similar ranks, older employees, those with long service, and lower ranks within an organisation.

Designers should take it into consideration that the counter groups will exhibit less supportive behaviour and ensure that the design does not discourage supportive behaviour in these groups.

15. Homogenous groups will tend to group together. In South Africa's highly heterogeneous society this poses a challenge. It is important that designers should be aware of people's comfort with homogeneity and ensure that the built environment supports voluntary interaction but at the same time not support social separation based on e.g., demographics. It is also important that integration should be supported by the built environment rather than force it.
16. Forced contact between employees will possibly not result in a positive relationship as being able to regulate interactions with co-workers mediates the impact and quality of people's relationships. This can especially be a concern in open-plan offices. Employees should have the freedom of choice to have non-work/social contact or not.
17. Areas such as tea rooms or restaurants, atriums, meeting nooks etc. should be provided where employees can relax and socialise. These areas can facilitate and encourage social interaction and can have a positive effect on cooperative and supportive relationships.
18. The impact of stressors can be mediated by certain social factors and workplaces should be designed to support cooperative and supportive relationships to assist in mediating work stressors.
19. A corridor which is long, wider and a thoroughfare will be perceived to be unfriendly and employees will interact less. Noisiness will increase and this will reduce helping behaviour. Roads which are long, wider and a thoroughfare will have a similar effect on users.
20. The environment must facilitate communication and social interaction by providing places and opportunities where people can meet informally e.g.



centrally located lounges, common facilities such as shared eating areas (as opposed to executive eating areas) and amenities such as fitness facilities.

21. Employees in larger companies will have less of a sense of attachment and also know fewer people. A positive effect (positive neighbouring) can be established by dividing people into smaller groups, for example grouping teams together.
22. Shorter, narrow and cul-de-sac corridors can increase a sense of belonging, but can create a lack of privacy, especially in heterogeneous groups. Shorter, narrow and cul-de-sac roads will have a similar effect on users.

### **Pleasure**

23. The main pleasure an employee would like to derive from the physical work environment is to work in a...
  - well-built,
  - attractive,
  - nicely and appropriately furnished,
  - well maintained, and
  - clean environment.

This can increase comfort and satisfaction as it has a positive impact on aesthetic impressions of the space and show regard for employee well-being.

### **Growth**

24. As mentioned under task instrumentality, the environment must support and facilitate task completion. To support growth the necessary support needs to be provided. For example computer technology should be available.

**8.2.2. Research question 2: Are there inter-cultural design principles that can be applied in a South African context?**

Within the context that only a quarter of design concepts indicated a difference on a cultural level (White/Coloured and Black groups), underlying design principles and needs are more universal and less varied in the context. Although aspects are called different names and have different reasons in the various disciplines, the underlying needs are the same.

**8.2.3. Research question 3: Are there gender neutral design principles that can be applied in a South African context?**

Again, in terms of gender, a quarter of the design concepts indicating a difference between males and females. Overall females were more sensitive to the environment and less likely to give a “*does not matter*” answer. Male participants tended to be more pragmatic, had difficulty imagining things and had more problems visualising the concepts when compared to the female participants.

**8.2.4. Research question 4: Are there age neutral design principles that can be applied in a South African context?**

Age differences accounted for more than a fifth of the aspects where older and younger participants differed in opinion and preferences.

Although the proportion of design aspects where there is consensus between groups is in the majority, the fifth to a quarter aspects where there is a difference between groups cannot be ignored. From this study it can be concluded that there are certain design aspects where there is a difference between groups, but the importance or weight of an aspect was not established. It is possible that a seemingly unimportant or insignificant aspect can play a major role in well-being and satisfaction.

### 8.3. LIMITATIONS OF THE STUDY

#### **Scale of the field**

The scale and number of possibilities to research in this study were infinite – both in breadth and depth. Attempts were made to contain the study by limiting it to office design. It is acknowledged that many important aspects were not and could not be addressed such as the influence of personality on preferences. This opens up possibilities for follow-up research.

#### **The measuring instrument and method**

The variety of possibilities to measure is endless and the techniques to use numerous. As it was not practical to have real life examples of all the situations that were identified to be tested or 3D simulations for the participants to assess, it was decided that the most practical approach would be to have 2D drawings as well as giving participants the opportunity to create their ideal environment in 2D. The ideal would have been to have participants assess real life situations. In general, participants were able to transcend the 2D drawings and visualize the setups in 3D. However, there were some participants who were less imaginative and had difficulty doing so.

#### **Presenting of scenarios for comment and discussion**

The participants were presented with four types of scenarios:

1. Associations for example with the five elements.
2. A 2D visual presentation of a layout for example the reception area layout.
3. A template to fill in their preferred layout.
4. *Feng shui* postulations where participants were requested to agree, or not, with the given statement.

The scenarios presented to participants can be regarded as leading, in contrast to just having an open discussion<sup>38</sup>. The main advantages of the more structured approach, was that all participants were exposed to the same stimuli as well as being able to

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<sup>38</sup> The open approach was originally intended and also used in the pilot study, but discarded because it was concluded that not all people are sufficiently sensitive regarding their environment.

obtain information from participants who would not spontaneously provide information because they are not as aware of their environment.

### **Generalisability**

The study attempted to gain a better and in-depth understanding of the research subject and had no intent or purpose to be generalised.

## **8.4. NEED FOR FURTHER RESEARCH**

In this study an attempt was made to give a broad cross section of the very complex, intricate and extensive field of the physical design of the office environment. Depth on any specific subject was therefore not possible. Depth studies on any of these aspects to confirm results would be possible. An expansion of the study to other work environments such as factories, workshops, retail areas including shopping centres as well as the residential environment would add to the understanding of the design of the physical environment. It would be especially valuable to further research the elements where there is a difference between subgroups to gain a better understanding and provide guidelines to designers.

## **8.5. CLOSING REMARKS**

By relying on various design cultures (e.g. Eastern and Western) an environment can be created which is pleasing and can enhance the well-being of the users. Underlying design principles are universal, but the symbolic expression thereof can differ from culture to culture.

There are many design principles which can be implemented to improve the quality of work life of office workers in the South African context. Design can for example play a very important role in encouraging and facilitating formal and informal interaction in the workplace – bridging the gap between heterogeneous groups. Without forcing relationship, design can assist in naturally integrating heterogeneous groups.

Design in the South African context also brings some challenges - maybe the biggest is to address the basic safety and security needs without compromising other aesthetic

design principles. Safety needs to be factored in when designing any space. Security and safety were often mentioned in relation to design. As crime is a very real and imminent danger, one can expect South Africans to place this aspect before practical and aesthetic aspects. There needs to be a compromise between an aesthetically pleasing environment and feeling safe and secure.

A second challenge in our multicultural society is to create spaces, which will be acceptable across groups. There is no one size fits all solution and compromise is required from all involved. The compromise applies to the roughly a quarter of design aspects where subgroup differences have been detected.

Any design should take individual and group differences into account. The only way to achieve this is to get proper inputs from all stakeholders at all stages of the design. It is critically important that the input is considered before the design process commences. The input should be obtained in a structured scientific way by suitably qualified people. It is not negotiable and should not to be compromised. Suitably qualified people would be specialists who have the required psychological background, research background as well as appropriate specialists from other disciplines such as ergonomists.

In establishing users' preferences it must be taken into consideration that the known will be preferred above the new, creative and innovative design elements. As mentioned in paragraph 8.1, people tend to prefer designs they are used to, which does not mean that the design horizon should not be expanded. The main aspect to consider is that one must strike a fine balance between the known and the new, and that it should be done in a way that does not alienate users.

Creating environments which are good for people needs to be driven and supported by top management. This requires time and, emotional and financial investment. Policies should be in place supporting the vision and mission of the organisation as well as assisting in achieving certain goals through the design of the physical environment. It must support the image and identity which needs to be communicated, facilitate communication and enable task accomplishment. Most of

all, it must become a place with which employees can identify and where they can develop a sense of place underpinned by the sense of belonging in space.

Finally, **form follows function** is a modern architectural and industrial design principle implying that the shape of a building or object should be based primarily upon its intended function or purpose (Lidwell, 2010). From this study it can be concluded that not only form should follow function but also that **aesthetics should follow function** – a principle that design should be based on the primary purpose of the building, the workspace based on the needs of the stakeholders, and from this starting point aesthetics will flow.

# **APPENDIX A**

## **DISCUSSION GUIDE**

**Demographics:**

Respondent number: \_\_\_\_\_

Gender: \_\_\_\_\_

Age: \_\_\_\_\_

Population group: \_\_\_\_\_

Province: \_\_\_\_\_

Current Company: \_\_\_\_\_

Position held: \_\_\_\_\_

Total years of service in an office: \_\_\_\_\_

Total time of interview: \_\_\_\_\_

**General note:**

**Answer the questions from an office perspective.**

There are no right and wrong answers and I would like you to answer the way you feel and what you think. It is also possible that you do not have an opinion about something. Your responses will be confidential and only be used for research purposes. You have the right to refuse to answer any question or stop the interview at any stage if you feel so. You are requested permission for the interview to be tape recorded for analysis purposes. The tape recording will be destroyed after completion of the study. All information will be confidential and no individual person will be identified in the analysis. The information will be used for a doctoral thesis.



## CONCEPT 1 FIVE ELEMENTS

### SLIDES 1-5

- What do you associate with each of the following elements? Water, Wood, Earth, Metal, Fire
- How would you translate this element into a design element at work? **PROBE:** colour, material, nature. **PROBE:** For: Walls, floors, ceiling, furniture
- With what industry do you associate each element (more than one element per industry is possible)? **INTERVIEWER:** Can probe for colour, texture, symbolism)
  - What do you associate with government? Why?
  - Advertising agency? Why?
  - Attorneys? Why?
  - Fast food outlet? Why?
  - Modern fusion restaurant? Why?
  - Pub/Tavern? Why?
- What industry are you working in and which element do you associate with it?
- Which element do you associate with an industry where things need to happen quickly – i.e. where high energy is needed?

# Water



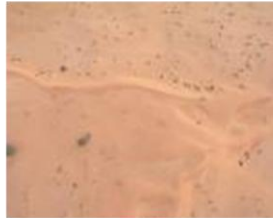
# Wood



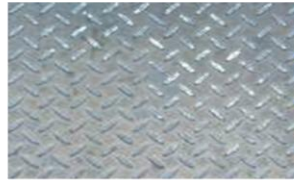
# Fire



# Earth



# Metal



## CONCEPT 2: LOCATION

There is a claim that when facing a building,

- Whatever lies in **front** of a building should ideally be **low** so that the entry to the building is easily visible, attractive and welcoming.
- On the **right** hand side ideally you will have a building, fence or vegetation slightly **taller** than the building.
- On the **left** hand side ideally you will have a building, fence or vegetation **lower** than the building.
- At the **back**, you would ideally have a building, fence or vegetation **taller** than your home and even taller than the building on the right hand side.

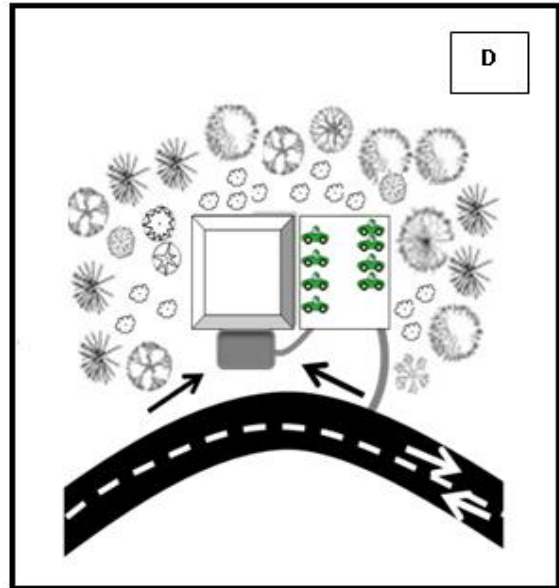
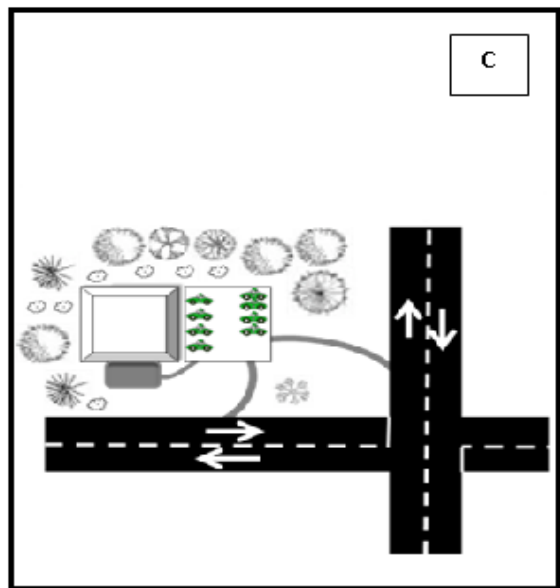
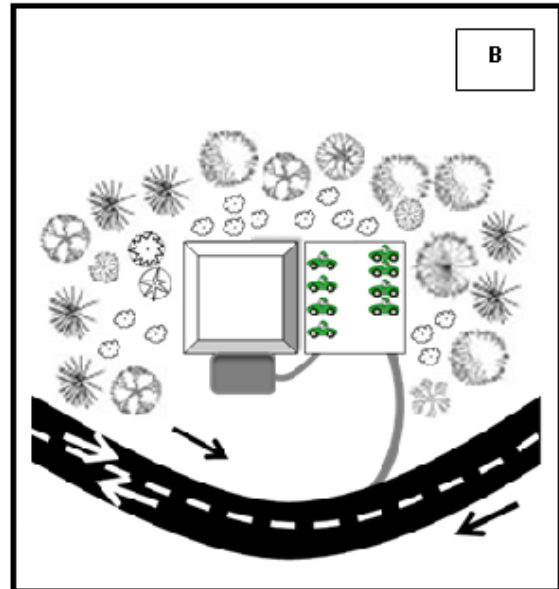
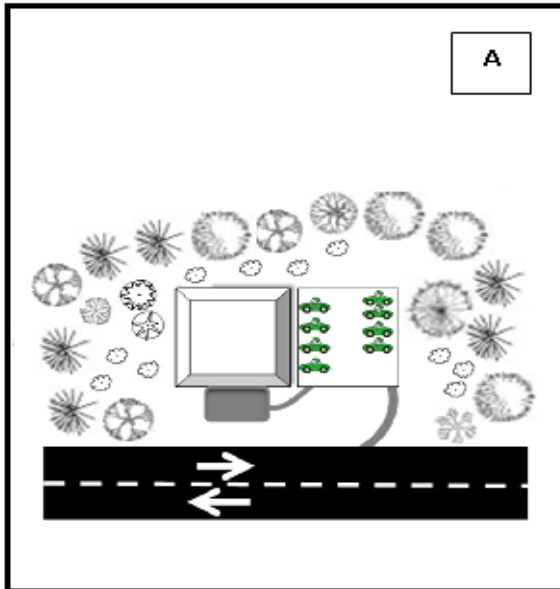
Visually it can be represented as follows:

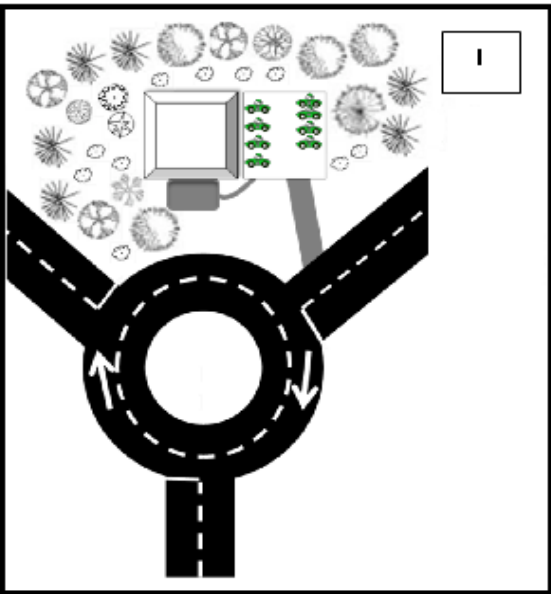
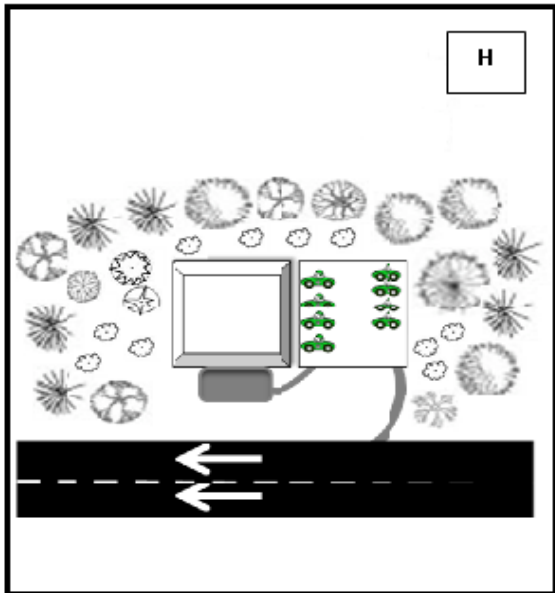
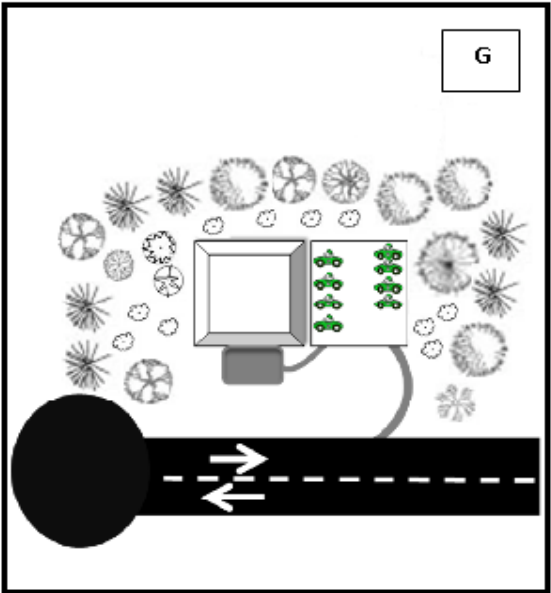
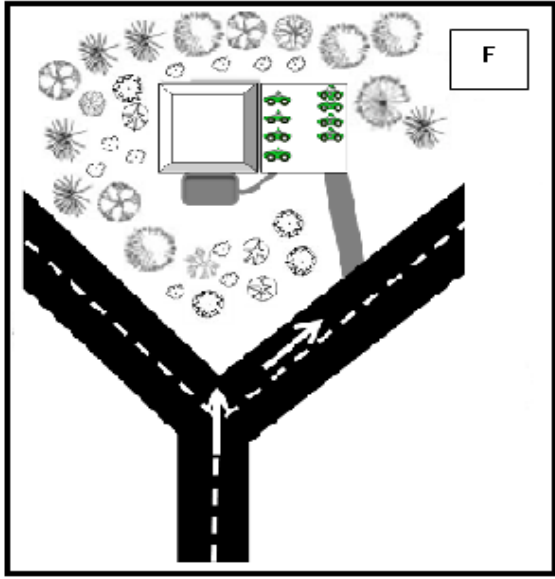
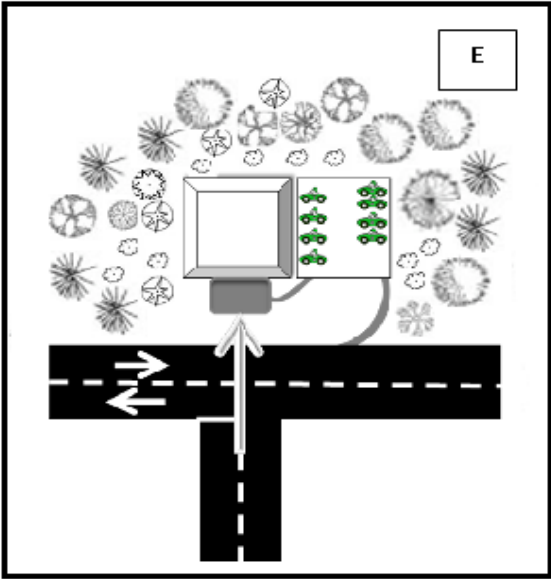


- What do you think of this? What do you think this symbolises?

### CONCEPT 3: ROADS

- Some of the following locations can be regarded as better and others as worse positions. Which would you regard as better and which ones as worse, or does it not matter to you. Why?



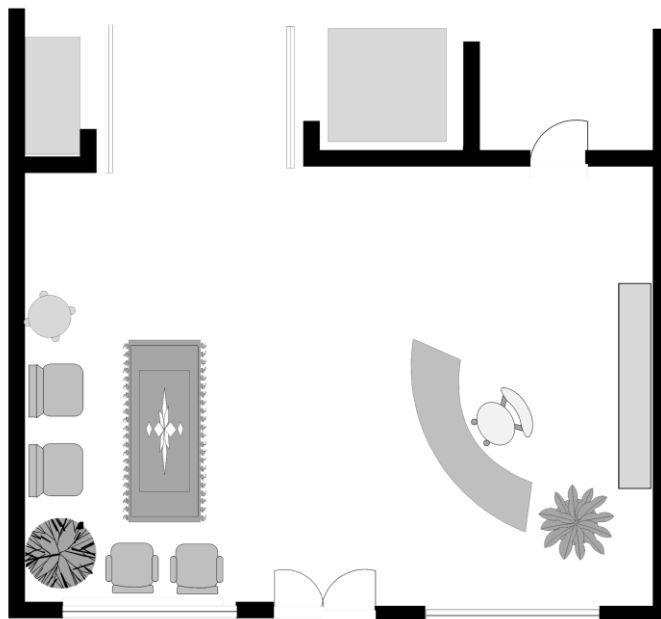


#### CONCEPT 4: LOBBY PLAN

- What is your opinion of the following lobby plan: What do you like? What do you dislike?

**PROBE:** How do you feel about the following:

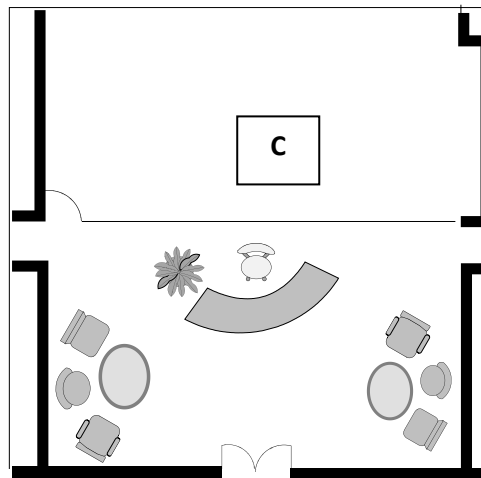
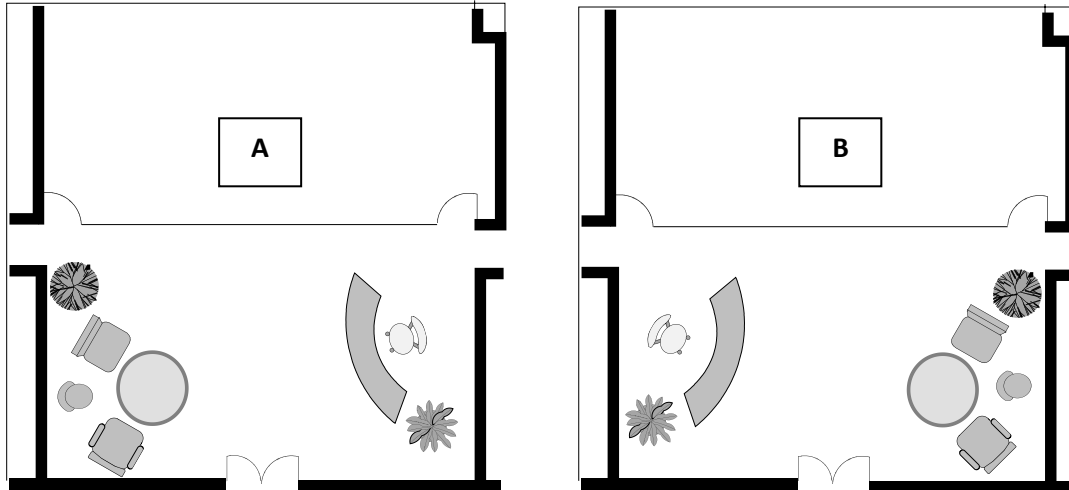
- The reception desk to the right?
- The visitors seating on left
- Would receptionists feel comfortable, safe?
- Would visitors feel comfortable, feel safe?
- Door to back of receptionist?
- Window at back of visitor's chair?
- **PROBE:** Why for each?





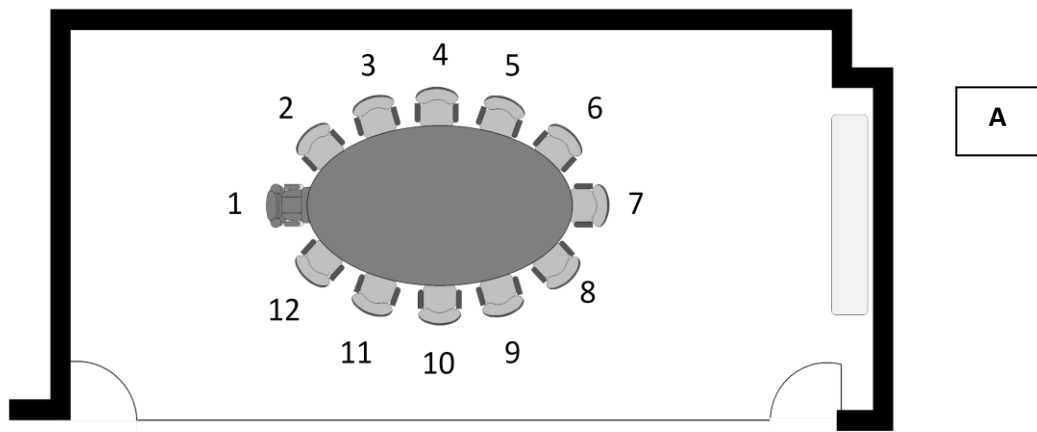
### CONCEPT 5: RECEPTION AREA

- Looking at A, B and C below depicting a reception area, what do you think of the reception desk on the right? Left? In front of you? Which one do you prefer as a visitor and why? How would somebody sitting at each of the options feel? Why?

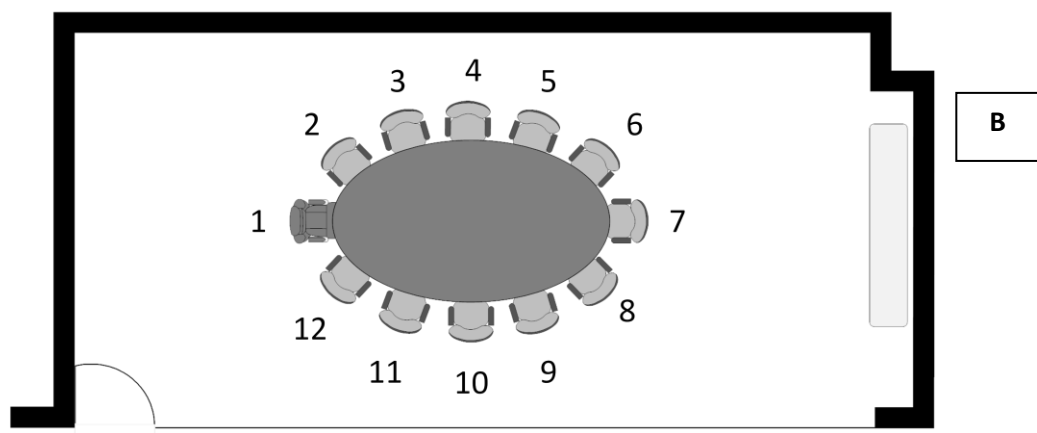


## CONCEPT 6: COMMANDING POSITION: BOARDROOM

- In which position would you prefer to sit in and why?
  - How will it make you feel?
- In which position would one sit where you would feel the most comfortable? And the most uncomfortable?
- Where should the person in authority sit? Why?

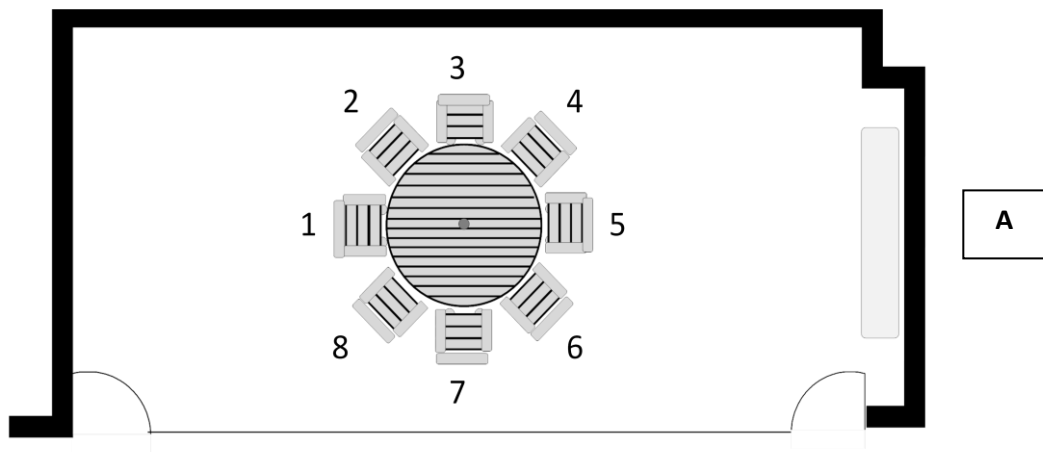


- In which position would you prefer to sit in and why?
  - How will it make you feel?
- In which position would one sit where you would feel the most comfortable? And the most uncomfortable?
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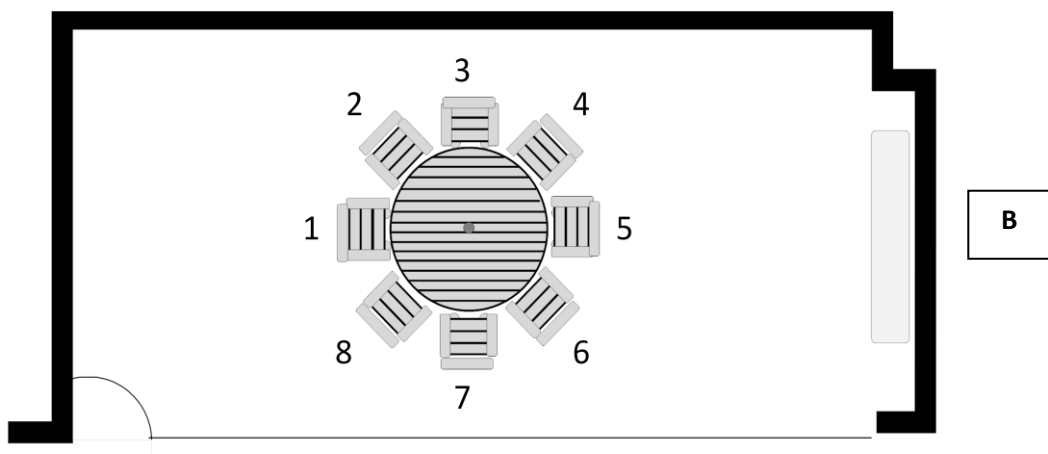


## COMMANDING POSITION: BOARDROOM

- In which position would you prefer to sit in and why?
  - How will it make you feel?
- In which position would one sit where you would feel the most comfortable? And the most uncomfortable?
- Where should the person in authority sit? Why?



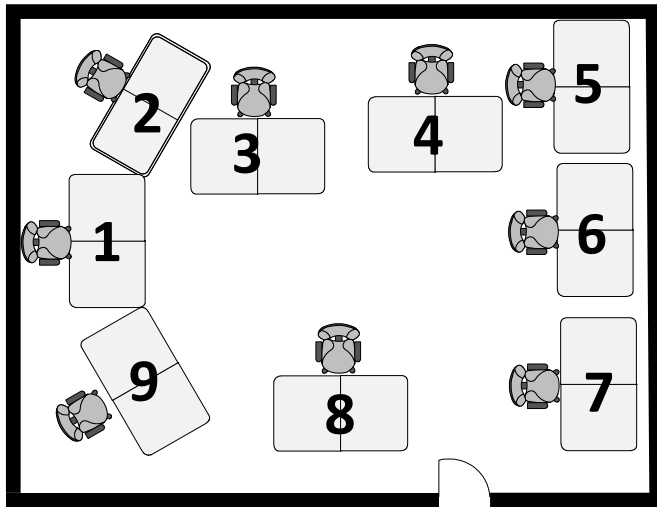
- In which position would you prefer to sit in and why?
  - How will it make you feel?
- In which position would one sit where you would feel the most comfortable? And the most uncomfortable?
- Where should the person in authority sit? Why?



## CONCEPT 7: COMMANDING POSITION

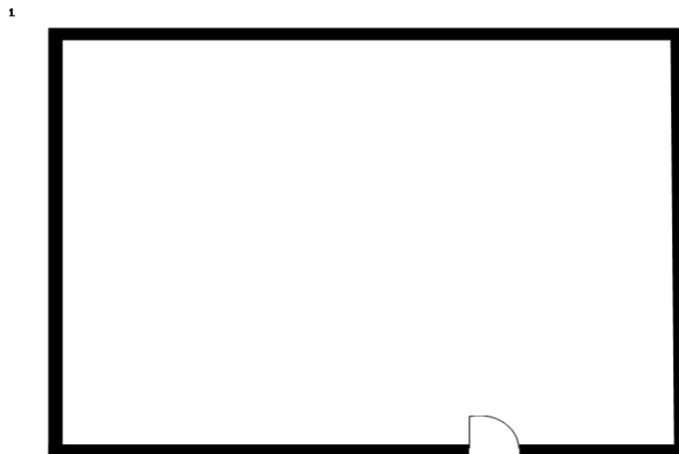
### Multiple occupants: Shared space

- Imagine that you are sharing the room with all others, how would you feel to sit in each of these positions starting with 1? Mention the number and then the advantages and disadvantages/how it would make you feel?
- At which number would you prefer to sit and why? What will it make you feel like?



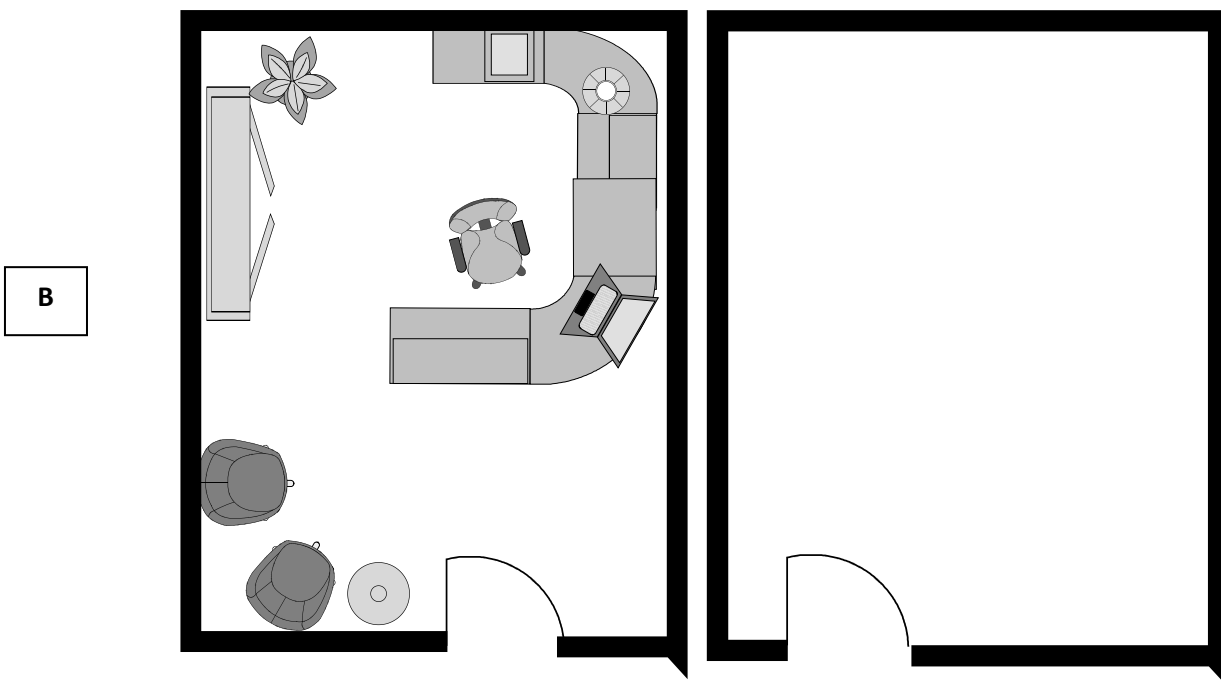
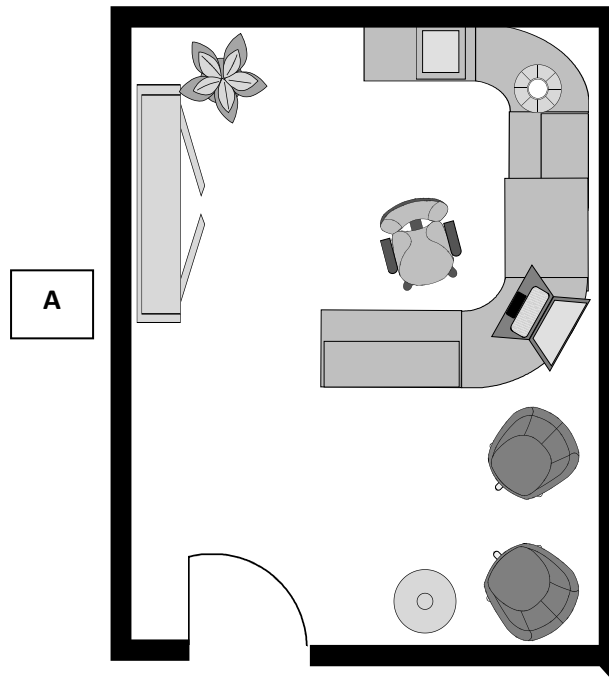
### Single occupant

- In the space below, draw where you would prefer to sit if you were the only occupant in an office? Why do you choose this position?



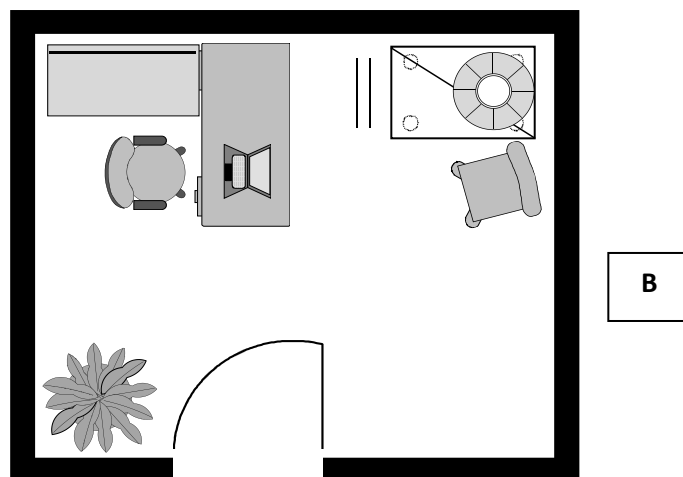
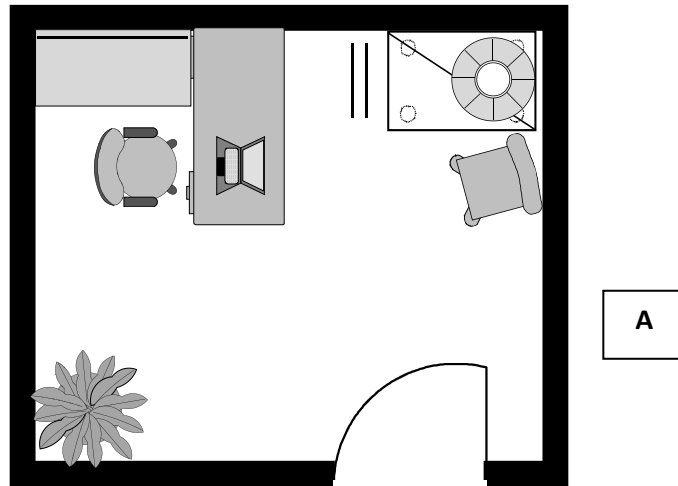
## CONCEPT 8: DESK POSITIONING

- What do you think of setup A? What do you like and what do you dislike?
- What do you think of setup B? What do you like and what do you dislike?
- Which setup do you prefer and why?
- Use the elements in the A and B, and indicate your ideal setup in C.



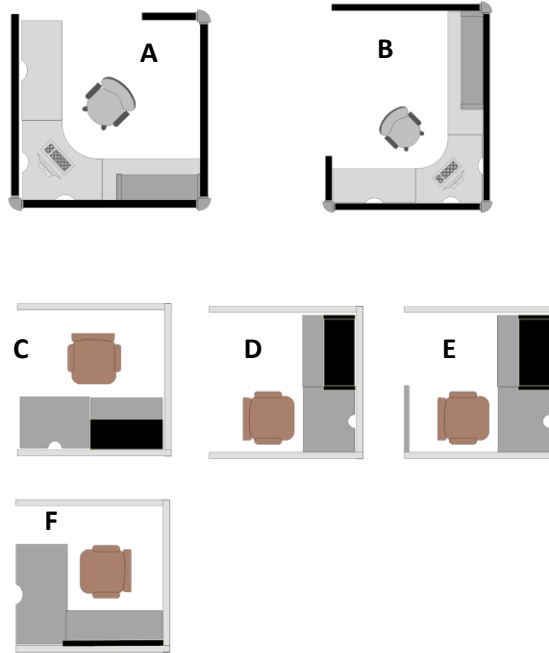
C

- What do you think of setup A? What do you like and what do you dislike?
- What do you think of setup B? What do you like and what do you dislike?
- Which setup do you prefer and why?



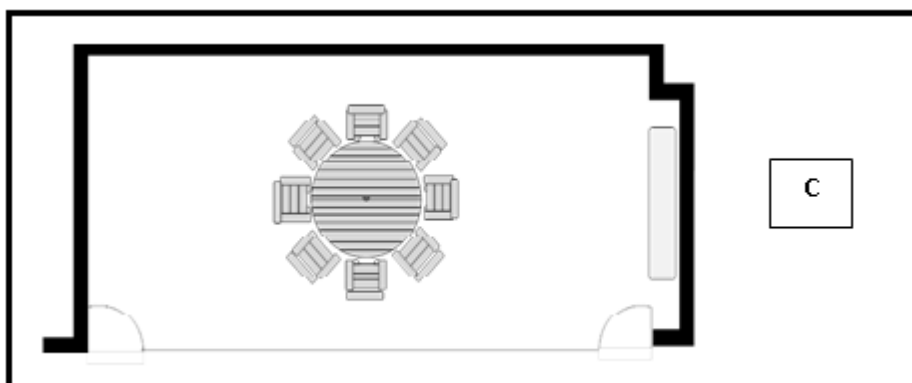
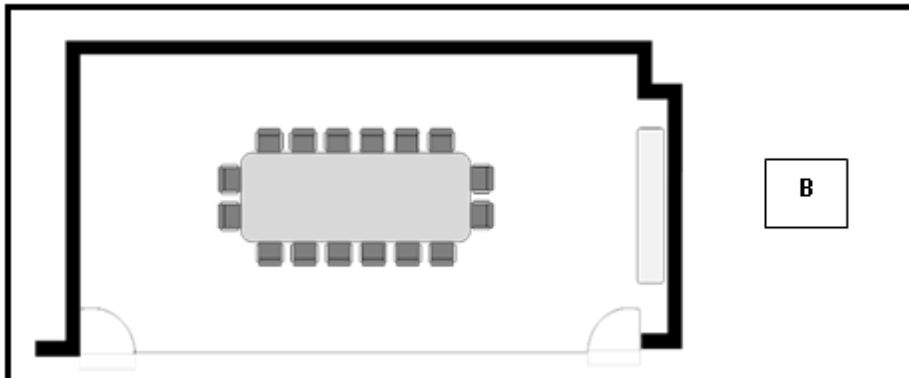
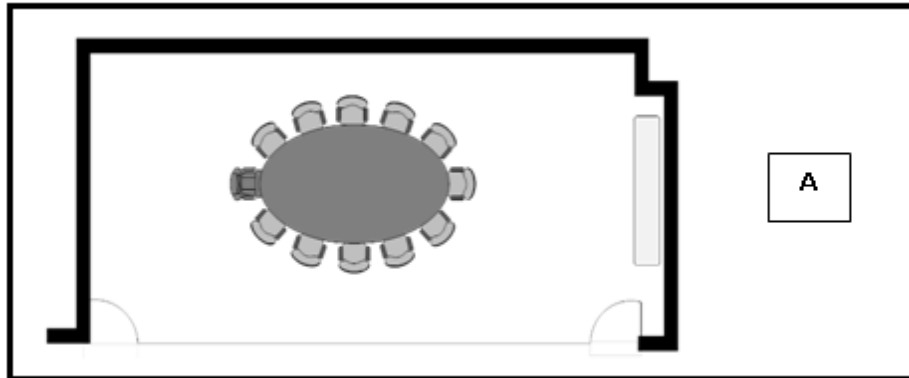
## CONCEPT 9: OPEN PLAN CUBICLES

- Below are examples of open plan offices. Which one do you prefer and why? Which one would you like least and why?



### CONCEPT 10: BOARDROOM TABLE

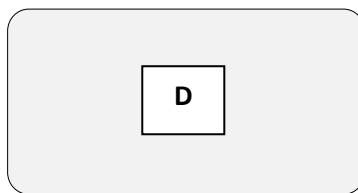
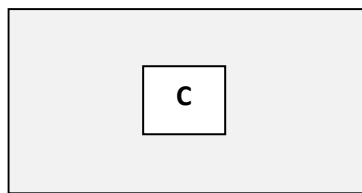
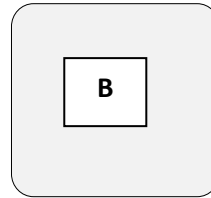
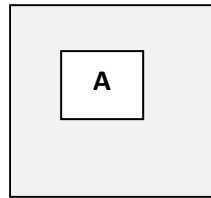
- Which table would be more conducive for discussion? Why?
- Which one would make you feel more comfortable? Why?





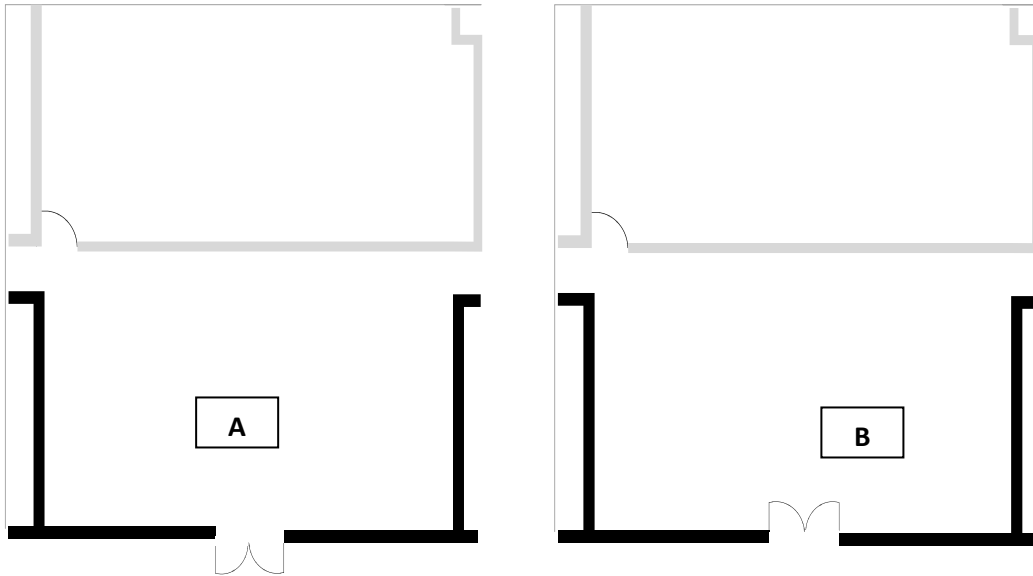
## CONCEPT 11: DESKS

- Below are different shaped desks. Which would you prefer and why? How will it make you feel?



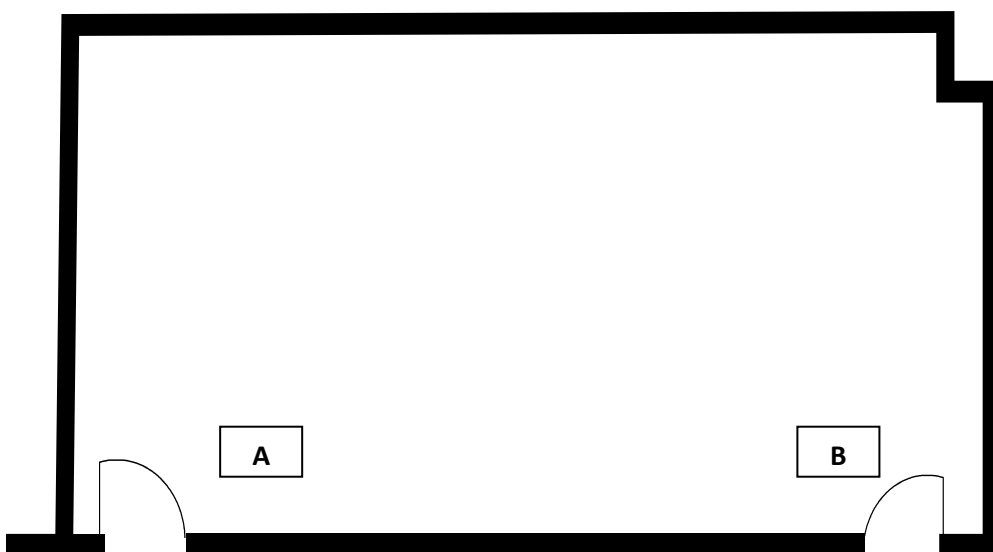
## CONCEPT 12: DOOR SWING

- Assume you are entering from the outside: The doors in A is opening towards the inside and B towards the outside. Would it make it a difference to you? In what way? Why?



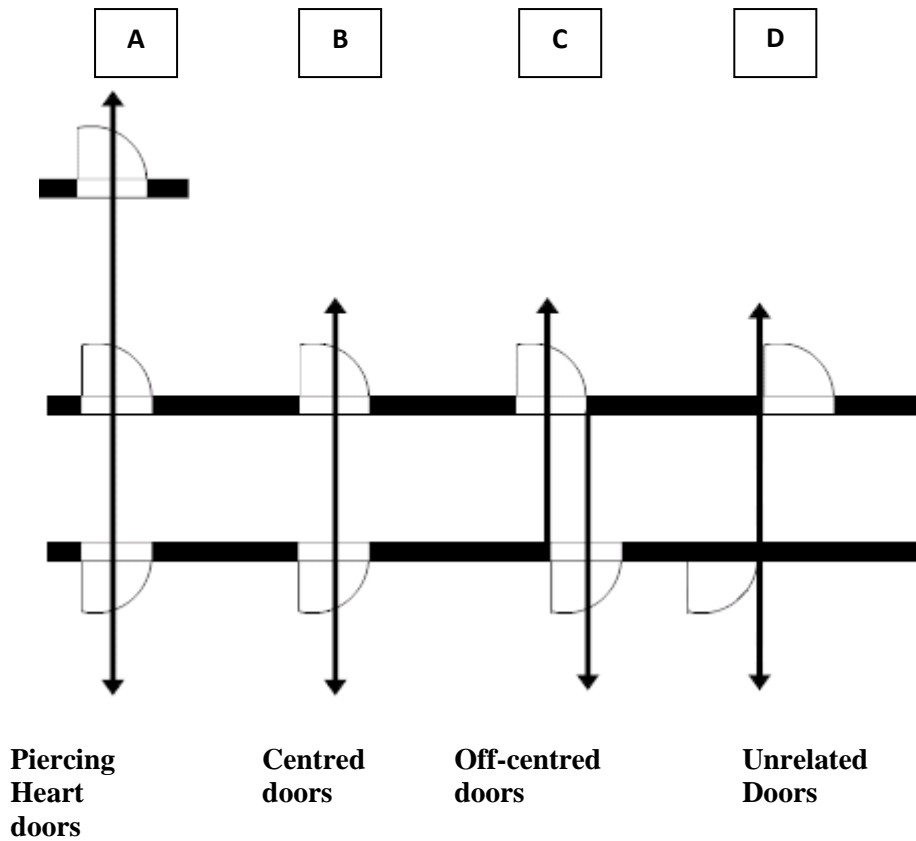
## Door hinge

- The door in A is opening towards the left and B towards the right. Would it make it a difference to you? In what way? Why? Which one do you prefer (if any)? Why?



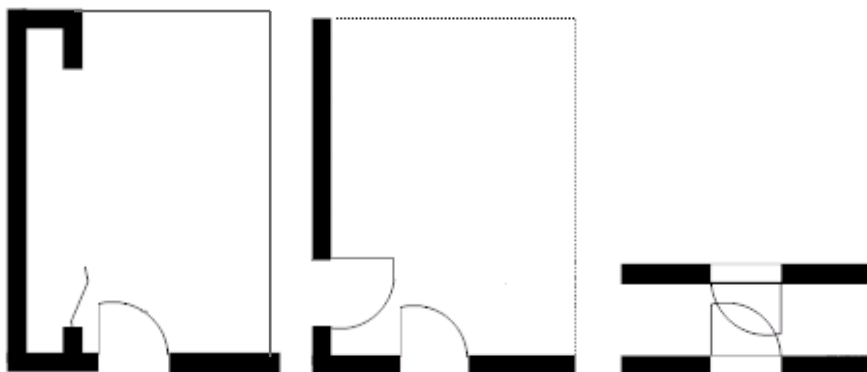
## Door relationship

- Imagine the following corridor and different door relationships. What do you think of each and why?



## Conflicting doors

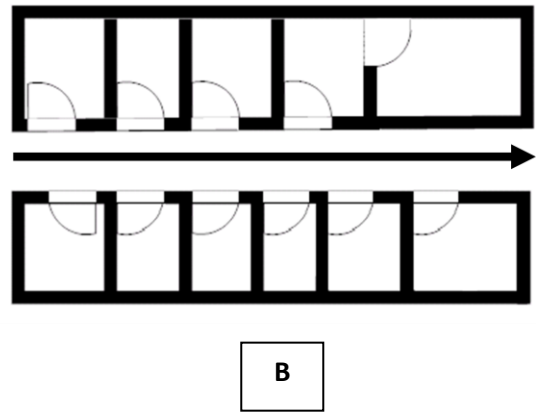
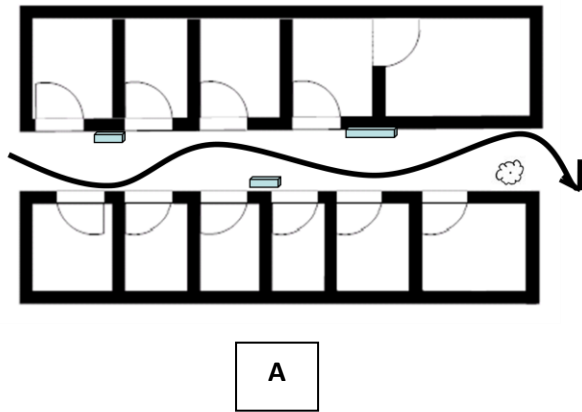
- Imagine the following setups and different door relationships. What do you think of each and why?



### CONCEPT 13: CORRIDOR

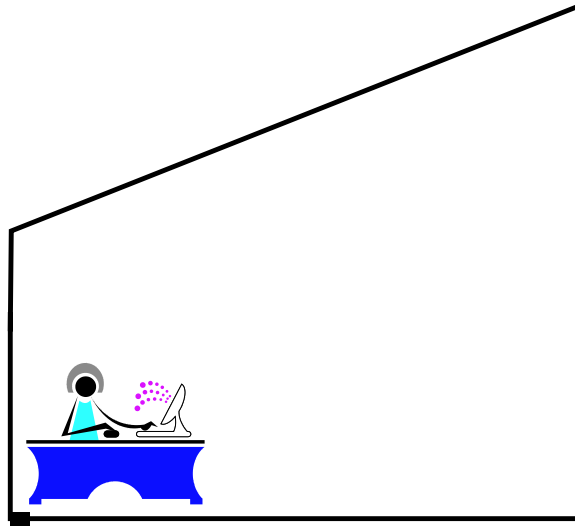
Below is an illustration depiction of two corridors.

- B is a straight corridor and A has artwork and plants to break the straight line and create a meandering feeling. Which one would make you feel more comfortable and why? Why does the other one make you feel uncomfortable?



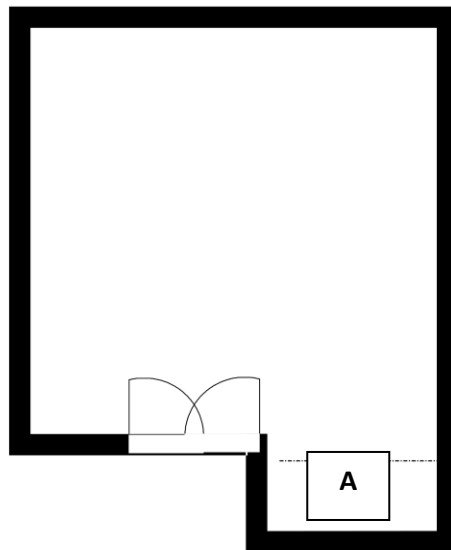
#### CONCEPT 14: VIEW OF SLANTED CEILING IN RELATION TO THE SELF

- Some people say that it can feel oppressive sitting under the lowest end of a slanted ceiling (as illustrated below). Do you agree with this or not? Why? Why not?



## CONCEPT 15: DOORWALL

- There is a claim that sitting outside the door (A) will make one feel excluded from the main activity. How do you feel about it?



## **CONCEPT 16**

### **There is a view that**

1. Sitting under a beam (with enough head space if you stand up) will feel oppressive and is not conducive for productivity. What is your opinion regarding this?
2. Sharp corners in an office (like pillars, desks etc) creates negative energy. What is your opinion regarding this?
3. Balancing light and dark colors, soft and hard surfaces, and smooth and rough textures in your choice of window treatments, furniture, and flooring and is conducive for productivity. What is your opinion regarding this?
4. Clutter in an office creates negative energy. What is your opinion regarding this?
5. Keeping your back toward a corner or a wall for support is the best seating position. What is your opinion regarding this?
6. Sitting in line with the office door is not conducive for productivity. What is your opinion regarding this?
7. Facing away from the door in an office puts you in a vulnerable position. What is your opinion regarding this?
8. Looking straight out into a corridor or see the stairs, storage rooms, closets, elevators, escalators, or toilets is not conducive to work performance. What is your opinion regarding this?
9. Sitting in the corner farthest from the entrance to the room facing the door is the best seating position. What is your opinion regarding this?

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