

World Conference on Psychology and Sociology 2012

## Landscape Design and Cognitive Psychology

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### Abstract

Kevin Lynch's *The Image of the City* remains one of the most important books in environmental design research. Its approach relies upon behavioral observations and systematic surveys of environmental cognition. We can perceive only what we see; thus, sight is the most important sense in landscape design. The spaces and objects of landscape design are stored temporally in the mind; they cannot be used by visitors. In this paper, the importance of cognitive psychology in landscape design is examined, and the concepts of imageability and mental maps are discussed.

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Selection and peer review under the responsibility of Prof. Dr. Kobus Maree, University of Pretoria, South Africa.

**Keywords:** Landscape Architecture, Cognition, Legibility, Imageability, Mental Map

### 1. Introduction

Landscape is a culturally shared environment; made up of woods, mountains, waters, and fields, it is where we grow up and live. Design is a highly complex and sophisticated skill. It is an important human activity because it links theory and practice and bridges scientific and creative undertakings when tackling ill-structured, open-ended problems (Lawson, 2005). These two terms are closely related. Cognitive science is increasingly interested in design because of the challenges that it poses to models of mental processes (Goel, 1995). In addition, the three-dimensional and environmental field of landscape design requires the designer to produce beautiful, practically useful, and well-functioning end products. It also entails very considerable technical knowledge and expertise, along with visual imagination and design abilities. Landscape design is an independent profession and a design and art tradition that is practiced by designers, who combine nature and culture. In contemporary practice, landscape design bridges landscape architecture and garden design (Landscape design, para. 1).

In cognitive studies, researchers quite often use another term, environmental perception, to describe the human ability to comprehend, interpret, and evaluate the physical world (Long, 2007). According to Bell, Greene, Fisher, and Baum (2001), perception involves experience and memory, a reflection which implies that cognitive processes are involved. Landscape perception is one branch of landscape assessment research and practice.

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Cognitive psychology is a sub discipline of psychology that explores internal mental processes. It is the study of human perception, memory, thought, speech, and problem solving (Feist & Rosenberg, 2009). It is also concerned with the structures and representations involved in cognition (Eysenck, 1990).

Landscape design focuses on both the integrated master landscape planning of a property and the specific garden design of landscape elements and plants within it. Practical, aesthetic, horticultural, and environmental sustainability components all merit attention (Landscape design, para. 1). Landscape design makes meaningful contributions to culture (Conan, 2003). Its overall objective is the improvement of the physical, environmental, and psychological well-being of people (Headquarters Departments of the Army and the Air Force [AFM], 1988).

One of the few important studies of urban cognition is Kevin Lynch's *The Image of the City*. In this work, Lynch examines the relationship between people and the visual character of the urban environment. He probes the mental images of cities held by residents or visitors. His major concern is to understand the way in which different components or parts of a city weave together in forming a distinct urban image (Lynch, 1960). More generally, these observations are related to Merleau-Ponty's observation that perception is not an experience of objects but rather an opening to the world, a way for the embodied person to enter into a communion with the world (Merleau-Ponty, 1962).

In the 1970-80s, the quantity and quality of landscape perception and research underwent rapid change. Most scholarly effort was put into empirical research that aimed to establish reliable and valid assessment methods of landscape perception (Karmanow, 2009). The field of landscape perception developed new concepts (e.g., scenic quality, landscape preferences, and visual attractiveness), discovered new methods, and accumulated research data to support its claims. In an influential article, Zube, Sell, and Taylor (1982) categorize the main trends in landscape perception research in terms of four paradigms: the expert, the psychophysical, the cognitive, and the experiential.

Over the years, significant efforts have been put into the analysis of the impact of gender, age, occupation, leisure, academic background, professional experience, familiarity, nationality, and religion on landscape perception and experience (Aoki, 1999). However, the issue of landscape experience remains poorly understood in landscape design theory. In recent decades, inquiry into the meanings of landscape has flourished. From the 1980s onwards, "declarations of meanings began to accompany the published photos and drawings of landscape designs" (Karmanow, 2009). The creation of meaningful (perceptually and symbolically significant) and experientially rewarding landscapes has always been of great importance in high-quality landscape design.

## **2. Elements and principles of landscape design**

All effective landscape designs rely on basic principles. An understanding of these principles prevents the creation of ugly landscapes and fosters the creation of beautiful ones. Unity, simplicity, variety, balance, sequence, and scale are terms often associated with art (Williams & Tilt, 2006). The elements of design, arranged according to certain principles are form, line, texture, and color (Wong, 2006). All these elements and principles interact to yield the intended design (Ingram, 1991).

## **3. Landscape experience and legibility of the environment**

The experience of landscape is holistic; it involves the flow of experiential qualities, images, thoughts, and meanings. It is a bodily experience and takes place in time and space (Karmanow, 2009). Some terms describe the experience of a landscape. One of them is legibility, which Lynch (1960) defines as "the ease with which its parts can be recognized and can be organized into a coherent pattern." Following Lynch, Weisman (1981) understands the legibility of an environment as "the extent to which it facilitates the process of way-finding." Legibility is also an important aspect of urban design, and it is obviously related to spatial cognition and, in

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