Chapter 21

Outline of a Design Tool for Analysis and Visual Quality Control of Urban Environments

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In this chapter, the main idea about a design tool and its object database system will be described. The design tool should improve design practice with respect to analysis and improving existing and planned urban environments. Preconditions for defining the design tool’s purpose are the determination of the “well-situated” urban elements, their impact on cognitive mapping, and the exploitation of the knowledge on cognitive mapping for the improvement of urban environments. This leads to the conclusion that an urban environment design, which takes of the process of cognitive mapping into consideration, will be experienced by most of the people in the same way. Investigations of this process result in a conceptual model of the tool by using elements of urban environments, their relationships and their dependencies. The theoretical background of the tool is based on design theory, cognitive science and computer science. Design theory and cognitive science will be used to develop the conceptual model. This conceptual model together with computer science will be the basis platform for tool development. The tool uses a schematic representation of urban environment, based on Lynch's theory of “urban forms.” Lynch’s theory is crucial for the


This chapter appears in the book, Modern Organizations in Virtual Communities by Jerzy Kisielnicki. Copyright © 2002, IRM Press, an imprint of Idea Group Inc.
tool development because it explains elements of urban environments. Systematic investigation of urban environments and their characteristics are also important for the object schema of the tool. The tool will use an object database system, which help to represent and to handle the urban elements with their properties and relationships, with their natural semantics. The information represented in the database will be used to analyze urban environment with the aim to improve and control their visual quality.

INTRODUCTION

The quality of urban environment has become important for present and future design and planning practice. Research presented in this paper focuses on developing a design tool for analysis and controlling of visual quality of urban environment, based on experience of cognitive mapping.

Planners, architects and urban designers have always been concerned with the relationship between people and the environment. The people-environment model is based on the hypothesis that a person responds to his environment as he perceives and interprets it in the light of his previous experience (Sprout & Sprout, 1965). Since the person’s response in relation to the environment is assumed to depend on his perception of the environment, it becomes important to find out how this is perceived. This leads to the distinction between the ‘real world,’ which is called the objective or geographic environment, and the ‘subjective world’ or subjective environment; the construction of a mental map, which depends on what is perceived by the person.

The purpose of this chapter is to present the main idea of a design tool supported by an object database system. At first we explain the theoretical platform for cognitive mapping and how to use cognitive mapping in design of urban environments. In the second part we illustrate how to represent the needed information in object schemas and explain how to derive information using this schemas.

BACKGROUND

In architectural and urban practice, analysis of the urban environment plays a significant role. The need for certain analysis to contain precise characteristics of urban elements is in the context of the analysis of city sites. There has been a continuous effort by architect and urban planner to understand and express those needs and desires.

The architectural and urban planning process is a complex problem-solving activity. One of the ways of describing architectural or urban design is by means of graphical representation. The representation facilities must consider alternative options at particular levels of spatial organization. Graphical representation of city
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