

Discovery of historical Tainan: a digital approach

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Abstract

This paper depicts the use of computers in the urban studies, and provides a digital way of understanding historical buildings and the relations with the city. “Discovery of Historical Tainan” is a joint project among historians and computer-aided design (CAD) researchers to preserve historical evidences of the central city of Tainan by using computer visual simulation. The importance of historical scenes is revealed by the efforts of integration with digital information and models. The process of modeling and the issues of computer visual simulation in the large-scale urban models are presented. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

Recently, computer visual simulation is applied to architectural design, urban planning, environmental studies, and historical preservation [1–3]. Computer visual simulation can produce still images or animation based on computer graphics, and the use of it for experiencing spaces or evaluating the quality of spaces becomes easier and more economic than the physical model. Meanwhile, computerized city models are used as a platform for urban design research [4], and they are more helpful to understand the interactions among environmental experience, at-

tributes and characters. Chiu [1] indicates the influence of computer simulation technologies on the built environment. Digital urban models can provide planners and people a visual communication tool, which can help better understanding of the characters of urban landscape and urban design procedures, and also the future development. Furthermore, ancient cities or ruins are also explored through computer simulation for examining historical evidences [5,6].

This paper depicts the use of computers in the urban studies, and provides a digital way of understanding historical buildings and the relations with the city from three levels, i.e. the building, district, and the city. “Discovery of Historical Tainan” is a joint project among historians and computer-aided design (CAD) researchers, which uses a digital approach to preserve historical evidences of the central city of Tainan. Therefore, the goal is to build a digital urban model and scenes, which can be used

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for historical and urban studies. It can be used to represent, analyze, and explore the past, current, and the future status of the city.

Lynch [7] indicates that three factors contribute to the image of the city: the identity, the structure, and the meaning. We are also imposing similar questions for ourselves in terms of the subjects of modeling, the process of modeling, and the rationale of modeling. Therefore, the discussion of the rationale, the process of modeling, issues in modeling, and the demonstration will be addressed in Sections 3–5.

2. The rationale of modeling

While a major part of this study is accomplished by computer modeling and simulation to reveal the importance of historical scenes, we spent more time to convince ourselves and historians to make the shift from the traditional approach of urban studies to a digital approach. A dialogue between the architectural historian and CAD researchers was raised with a series of questions such as:

What can we do about computers for studying historical buildings?

Why do we need to visualize the precedent or artifacts?

What can we know about the precedent from computer simulation?

Is that worth to study architectural or urban history by the computational tools?

The above questions provide the impetus for our thinking about the rationale of modeling. Historians search for the evidence as well as the facts and new views. Therefore, historians and designers handle a large volume of information for their daily work. CAD can be used as a tool in discovering and recording the facts and views. Ancient people carved the artifacts in stone, now we are shaping the artifacts by bits with the help of computers.

Indeed, an image is worth more than a thousand words. People receive a strong perception from computer images, such as those generated from full-color rendered images. The lesson learned from architectural history is to validate the possibility of new views or theories. Computers provide a reconfigured eye for historians to examine the created digital world [8]. So far, computer simulation is more efficient than any other means for collecting and representing digital information.

In the past years, we continuously posed the above questions and had used computers for the following reasons:

(a) A recorder — We start to build a collection of text, graphs, images, and maps regarding the historical buildings and related literature, which can be useful for architectural or historical studies.

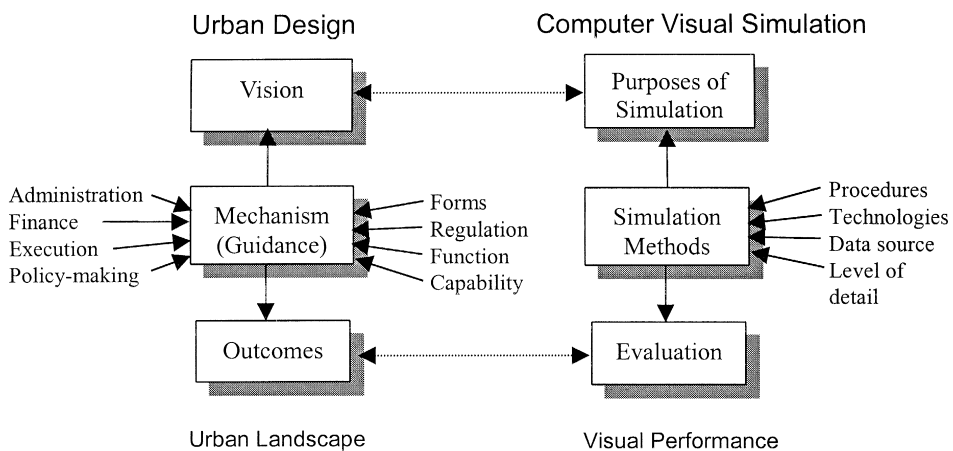


Fig. 1. Relationship between computer visual simulation and urban design.

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