Research on the Revitalization of the Defensive Fortress of the Great Wall Based on the Adversarial Interpretive-Structure Model

Zhan Jingyi*, Li Ming (C.A.)**

*Dalian University of Technology, School of Architecture and Fine Arts, China
E-mail: zhanjingyi2021@163.com
**Dalian University of Technology, School of Architecture and Fine Arts, China

Abstract

This article aims to formulate a revitalization strategy for the affiliated fortress of the Ming Great Wall. The Adversarial Interpretive-Structure Model (AISM) extracts the opposite hierarchical rules and obtains a pair of simplified hierarchical topology graphs. The directed line segments in the adversarial hierarchical topology graph represent the interrelationships between the elements, which are presented in a topological hierarchy and can easily compare the advantages and disadvantages of the revitalization factors, which provides a basis for subsequent revitalization strategy formulation. The adversarial hierarchical topology graph provides a new method for conserving and reusing architectural heritage.

Key Words: adversarial hierarchical topology graph, fortress, architectural heritage, conservation and reuse

1. Introduction

Historic buildings are part of cultural heritage, allowing us to revisit the past while significantly impacting tourism. However, issues such as the lack of regional-specific activation models often lead to unsatisfactory results in protecting and activating architectural heritage. Therefore, a scientific and systematic activation process and evaluation method are particularly important.

The Adversarial Interpretive-Structure Model (AISM), derived from systems engineering research methods, can help us to make better systematic evaluations and thus to better control and adjust the final patterns. When applied to the evaluation of the hierarchical relationship between the various activation influences, it can weaken the subjectivity of the evaluation, and the resulting topology graph can directly guide the formation of the final activation plan. Its systematic model decision-making process can objectively calculate and compare the importance hierarchy of the influencing factors and finally provide targeted solutions in case studies.

Taking the case of Zhenbei Fort in the Ningxia Hui Autonomous Region, China, this article uses the Adversarial Interpretive-Structure Model to evaluate the hierarchical relationships of activation influencing factors obtained from the investigation.

2. Research Object

The Ming Great Wall fortresses are a series of forts, passes, and castles near the Great Wall built on China's northern border during the Ming Dynasty. These fortresses, which usually consisted of defensive facilities such as walls, forts, and moats, were an important part of the northern border defense of the Ming Dynasty and one of the representatives of ancient