Journal of Ceramic Processing Research. Vol. 24, No. 6, pp. 1037~1041 (2023)
(Received 27 November 2023, Received in revised form 7 December 2023, Accepted 7 December 2023)
https://doi.org/10.36410/jcpr.2023.24.6.1037

J O U R N A L O F
Ceramic Processing Research

Study on the influence of building materials processing technology on diversified artistic expression of Architecture

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Building materials stand as a crucial cornerstone in the realm of architecture in China. Enhancing the processing technology of diverse building materials to effectively elevate the level of architectural art has emerged as a prominent research focus. In light of this, the paper develops an analysis model centered on the influence of architectural art, utilizing the Taurus search algorithm. The study delves into the impact of distinct processing technologies on the diversified artistic expression of buildings. It commences with an analysis of the current state of building materials processing technologies and their connection to architectural art. Following this, the paper constructs an analysis model elucidating the influence of architectural art, examining its effects on diversified artistic expression through experiments. Finally, by amalgamating established building materials processing technology with experimental verification, the paper scrutinizes the actual efficacy of the analysis model for the influence of architectural art based on the Taurus search algorithm. The experimental outcomes underscore the varied influence of different processing technologies on the diversity of artistic expression in buildings, showcasing the quantitative evaluation capabilities of the impact analysis model.

Keywords: Building materials technology, Taurus search algorithm, Architectural art impact analysis model, Art expression.

Introduction

According to the publicly available statistical data from China's building materials industry, as published by the National Bureau of Statistics in 2019, the processing technology mode of China's building materials is still primarily dominated by traditional processing and production methods. Its processing technology regulations are rarely combined with modern intelligent systems [1]. In recent years, the development of Internet technology has led to the optimization of the processing technology of building materials in China. The emergence of intelligent processing processes and reliable processing quality of building materials provides opportunities for large-scale development of building materials production systems based on Optimization Strategy in the field of building materials processing. Therefore, research on the processing technology of building materials has been conducted both at home and abroad [2]. Currently, although the existing building material processing management system provides numerous processing methods, it is challenging to develop the best processing scheme according to different architectural artistic requirements in the specific application process to achieve the best artistic effect. In this context, this paper puts forward the influence analysis model of architectural art based on the search algorithm of Taurus and studies the influence degree of different processing technologies of building materials on the diversified artistic expression of buildings.

The innovation of this paper is to propose an analysis model of architectural art influence based on the search algorithm of Taurus. On this basis, this model can not only realize the analysis of the influence of different processing technologies of building materials on architectural art but also make full use of the different characteristics of different processing technologies of building materials to realize the analysis of processing technologies of different building materials and the diversity of Arts. The closed-loop operation of the analysis system is affected by the expression of the technique. On the other hand, the data matching degree between the comparison columns and the reference columns is quantitatively described by the double coupling factors, and the priority ranking of different construction materials processing processes on the expression of the influence of architectural artistry is completed by quantitative indicators [3]. This can effectively extract the characteristics and weight ranking of the factors that affect the aesthetic effect of architectural artistry.

This paper studies the influence of different building materials processing technology on the diversified artistic expression of architecture, which is mainly divided into three parts. The first part introduces the research status of the processing technology of building materials and the artistic expression of architectural diversity at home

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and abroad [4]. In the second part, the influence analysis model of architectural art based on the search algorithm of Tianniuxu is constructed, and the data storage and evaluation index system of building material processing technology information cloud are constructed using the Fourier transform method. In the third part, the reliability of the model is tested in practice, and the results are analyzed.

Currently, there are many problems in the processing technology of building materials and the artistic expression of architectural diversity, especially in the optimization management of the processing technology of building materials and the design of structural dimensions. Scholars from Yale University in the United States found that most building materials still use the traditional Western Gothic architectural artistic expression method in the aspect of artistic expression, ignoring the influence on the architectural in. According to the influence of the processing technology of building materials on the artistic expression of architectural diversity, and the processing technology model of building materials often uses the input method of freeze frame. Therefore, based on the characteristics of The strategy of data clustering analysis and processing is to collect and input the information in the process of building material processing in real-time [5]. According to the different data produced in the process of building materials, the scholars of the Royal College of Art put forward a targeted strategy based on the basic parameter information of different types of building materials. This paper improves the information input mode of intelligent management and control of building materials processing technology, puts forward an optimized control management model of building materials processing based on the neural network algorithm, collects the data information of the optimized control model of building materials processing technology in a normalized way, and then realizes the process of processing technology through the neural network algorithm. The resulting information is processed to the truth [6]. Based on the theory of architectural art and spatial structure design, the scholars of the Royal Melbourne University of Technology, Australia, put forward an intelligent analysis and management model of building material processing technology based on a three-layer encryption protocol for the utilization of different types of building material processing data and the unified management of different departments, and expressed the artistic expression in the production process of building materials. The effect is applied to different types of architectural structure designs. Based on the influence analysis model of architectural art, the intelligent analysis of the processing technology of building materials and the test method of the control effect are established, which are divided into data collection, data processing, result feedback, and other parts. Finally, through practical verification, it is found that this method can promote the efficiency of the processing technology of building materials in the production process and also improve the artistic expression effect of the building [7-10].

Methodology

Research object

In this paper, during the research on the influence of different building materials on the diversity of artistic expression in architecture concerning processing technology, 30 different types of building materials in two categories, A and B, are randomly selected as the research objects. These building materials vary in type, and their appearances and structural designs are also random. Table 1 provides a qualitative summary of the basic conditions of the processing technology of these 30 different types of building materials. From Table 1, differences in processing technology, structural design, processing efficiency, and processing quality are evident among the 30 different types of building materials. The processing mode for these building materials mostly adopts traditional and established processing methods, and commonly used evaluation methods are applied in the research of processing technology and efficiency.

Research evaluation model

Currently, numerous research and evaluation models exist for the processing technology and artistic expression effects of building materials in China. Commonly used evaluation methods include the CE model, VWE model, LFE model, and others. In this paper, we utilize the research evaluation model (N-LDE model) developed by the New York Institute of Visual Arts. Considering that the difference in each evaluation index in the N-LDE evaluation model is too large, hindering the credible evaluation of artistic expression for different types of building materials in this study, we account for various factors during the evaluation and research process. We query relevant information, appropriately

Table 1. Basic information on different types of building materials.

Categories and indicators	Class A building materials	Class B building materials
Processing technology	general	good
Exterior structure design	high quality	general
Processing efficiency	good	high quality
Processing quality	good	general

Table 2. Revised Nonlinear Discriminant Evaluation Model.

Evaluation scale	Artistic expression	Artistic expression effect
General	0.66	0.59
Good	0.82	0.74
Gigh quality	0.91	0.81

screen and add relevant items, and determine two core evaluation indexes. The following scale evaluation model is presented in Table 2.

In order to reduce the influence of other factors on this study, we need to measure the credibility and objectivity of the nonlinear comprehensive evaluation model before the revised evaluation model is implemented. Therefore, 30 different types of building materials of A and B categories are selected for investigation, and the analysis data and objective reference data are obtained. Before the test, carry out preliminary testing to different types of building materials, and complete within the specified time, and then carry out comparative analysis on the results of the testing. Through the correlation analysis of various dimensions in the evaluation model, it can be seen that the relevant data of the good indicators of artistic expression and expression effect are 0.74-0.91, and the difference dimension is not obvious, which shows that the research evaluation scale adopted in this study is suitable for the evaluation of different types of building materials' diversified artistic expression methods and the impact of expression effect. Further analyze the reliability and effectiveness certification of the evaluation model. Table 3 is the summary results of index data of different evaluation models [11-15].

In this study, next, we need to test the objectivity of each evaluation factor in the research model. From Table 3, we can see that the data of different types of evaluation models are not different from the evaluation models used in this study, and all of them reach a statistically significant level, which shows that the evaluation models of the diverse artistic expression of different building materials in this study are The credibility and objectivity are relatively high, covering three dimensions of effective time, analysis strategy and analysis mode for data analysis, including 24 indicators. Therefore, the higher the score, the better the diversified artistic expression effect of different building materials.

Table 3. Summary results of indicator data of different evaluation models.

Evaluation models and indicators	General	Good	High quality
CE model	0.60	0.75	0.85
VWE model	0.63	0.73	0.86
LFE model	0.61	0.76	0.82

The construction process of architectural art influence analysis model based on the search algorithm of Taurus

In this study, the Tianniuxu search algorithm is employed to analyze the influence of the processing technology of different types of building materials on the diversified artistic expression of buildings and establish an analysis model of architectural art influence. In this model, the analysis strategy of building materials is divided into construction material processor data collection, data processing, result feedback, and other parts of art. Therefore, in the analysis process of different types of building materials, first, the evaluation factors are selected for the objective evaluation of the processing methods of different building materials. The accuracy of the model is evaluated from various angles, providing a reference sample for the establishment of the intelligent architecture art objective impact evaluation system. Finally, combined with simulation experiments, the reliability of the model is analyzed and verified using the relevant data of different building materials.

Step 1: Mark the abnormal signals generated in the processing process of building materials using the influence analysis model of architectural art, and then conduct trans-inspection to identify the processing methods of building materials under the high-efficiency management state and the data information different from the corresponding signals.

Step 2: Design different types of data analysis platforms based on the different types of sensors, and according to the basic parameters of different types of building materials, divide the corresponding interface definition configuration, interface definition, and wireless communication protocol into different modules. When the platform collects data information in the intelligent information technology analysis management model of building material processing technology, it converts the data into binary numbers. In the intelligent analysis of the processing technology of building materials, during the analysis of data in the management system, we set the binary code corresponding to the standard management information. Using the architectural art impact analysis model, we analyze the data information in the processing process of building materials and input the processed building materials and processing technology optimization information into line code processing. Then, the binary code and the standard binary code are comparatively analyzed, screening out the construction material processing process information (i.e., abnormal data) that is quite different from the standard binary code. Through the reverse tracking of this information data, we indirectly find the source of abnormal data, enabling an analysis of its impact on the diversified artistic expression of the building.The evaluation expression of its impact degree is

$$\rho_{k+1}(x)=\frac{\rho_k(x)+\rho_k(x-1)}{k}-\frac{\rho_{k-1}(x-1)+\rho_{k-1}(x-2)}{k-1} \tag{1}$$

The corresponding error correction function is:

$$\sqrt{\rho_{k+1}(x)}=\frac{\sqrt{\frac{\rho_k(x)+\rho_k(x-1)}{k}}+\sqrt{\frac{\rho_{k-1}(x-1)+\rho_{k-1}(x-2)}{k-1}}}{2} \tag{2}$$

Step 3: since the analysis strategies used in the analysis model of architectural art impact in this study are all based on the search algorithm of Taurus, the analysis model of architectural art impact excludes the impact of human factors on the evaluation process [13]. However, the model is still in the process of data analysis, and the corresponding signal will be abnormal, which is mostly caused by the improper analysis process of the processing technology of building materials. Therefore, we collate and analyze the data of these abnormal parts, and classify the abnormal data to analyze the error of the expected building material type and processing technology characteristics, which cannot be eliminated The data were excluded. The discriminant function in the corresponding impact evaluation model is:

$$f_k\left[\rho_k(x)\right]=\min_{0\le\rho_k\le g_k}\left\{g_{k-1}(x_k)+\rho_{k+1}(x_{k+1})\right\} \tag{3}$$

Through the influence analysis model of architectural art to analyze the error of abnormal data, the error analysis module mainly includes the following parts, such as whether the effective processing time of building materials is less, whether the processing mode is more traditional, artistic expression and so on. In addition, the artistic effect evaluation is carried out for different types of building materials participating in this study, mainly to evaluate the specific values in the three dimensions of the artistic effect of building materials, and analyze the relationship between the influence of the processing technology of building materials on the diversified artistic expression of buildings [15].

Result Analysis and Discussion

Experimental design of the influence degree of different building materials processing technology on the artistic expression of Architecture

Before the experiment, it is necessary to determine the weight of the artistic influence degree of the data and information in the process of analysis. Therefore, four groups of experimental tests were carried out for 30 different types of building materials. The initial data and information of each group of experimental process were the same before the test. The weight of the processing technology and artistic effect of the tested building materials in the standard test database was 0.2, 0.25, 0.33, 0.5, 0.33, 0.25 and 0.2, respectively. In the simulation process, the artistic expression effect also showed first The tendency to increase gradually and then decrease gradually.

During the experiment, with the change and increase of the weight, the correlation between the data and information generated by the processing technology of 30 different types of building materials and the diverse artistic expression effect is gradually weakened. When the weight is 0.5, the overall error is 3.4%, and its artistic expression effect is improved. The error is still in this study Within the initial allowable range (5%), it shows that the model is effective and scientific in the processing of different types of building materials and the artistic expression of architectural diversity.

Experimental results and analysis

During the analysis of experimental results, establishing a core dimension system for the evaluation model is imperative. In our investigation into the impact of diverse building materials on artistic expression, 30 materials were involved, and 25 exhibited significant

Table 4. Analysis and statistics of 25 building materials.

variable	Environmentally friendly building materials	Comprehensive building materials	Percentage (%)
Processing technology method	high quality	high quality	89.3%
Artistic aesthetic effect	good	high quality	83.8%
Quality of processing technology	general	general	63.2%

Table 5. Comprehensive evaluation of the artistic influence of building materials.

Categories and indicators	Class A building materials	Class B building materials
Expression of artistic aesthetic effect	9.28±5%	9.88±5%
Artistic aesthetic quality	9.32±5%	8.93±5%
Visual impact	9.61±5%	9.72±5%

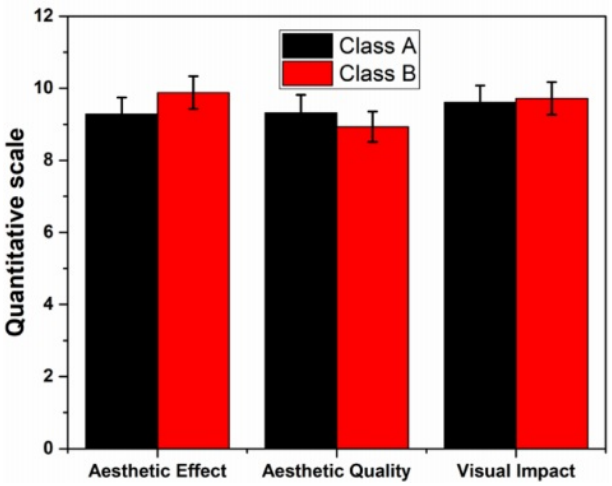

Fig. 1. Comprehensive assessment of the artistic influence.

influence on architectural diversity artistic expression, constituting 82.8% incidence. A crucial step involves categorizing these influential materials to verify the credibility and objectivity of the experimental outcomes. The analysis reveals that these 25 building materials exert various factors influencing the analysis of diversified artistic expression in buildings. Table 4 illustrates feedback analysis and statistics for these materials, with a relatively minor impact on artistic expression, accounting for 63.2%.

Comparatively, adjustments are recommended for processing technology and structural design, encompassing size, material laying thickness, and processing quality, particularly for environmentally friendly building materials. Following the preliminary analysis of experimental results, a comprehensive examination of their influence on architectural diversity's artistic expression is warranted. This entails a quantitative evaluation of different building materials concerning artistic aesthetic effect, aesthetic quality, and visual impact. Table 5 and Figure 1 presents a comprehensive assessment of the corresponding artistic influence of diverse building materials in the expression of architectural art, using a quantitative scale with a maximum score of 10. The table reveals that the processing technology of various building materials exerts distinct effects on the diversified artistic expression of buildings, yet a discernible pattern emerges in the overall trend.

Conclusion

The traditional processing technology of building materials relies heavily on manual analysis and optimization, resulting in low processing efficiency and subpar artistic effects. Addressing this issue, this paper establishes an analysis model for the influence of architectural art based on the Taurus search algorithm. The study investigates how various processing technologies of building materials affect the diversified artistic expression of buildings. It begins by analyzing the current state of building materials processing technologies and their relation to architectural art. Subsequently, the paper constructs an analysis model for the influence of architectural art, examining its impact on the diversified artistic expression of buildings through experiments. Finally, by combining established building materials processing technologies with experimental verification, the paper assesses the practical effectiveness of the analysis model for the influence of architectural art based on the Taurus search algorithm. The experimental findings highlight the varied influence of different processing technologies on the diversity of artistic expression in buildings, showcasing the quantitative evaluation capabilities of the impact analysis model.

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