

Retraction

Retracted: Ecological Effects of Local Materials in Landscape Design based on Machine Learning

International Transactions on Electrical Energy Systems

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] J. Li, "Ecological Effects of Local Materials in Landscape Design based on Machine Learning," *International Transactions on Electrical Energy Systems*, vol. 2022, Article ID 7340002, 12 pages, 2022.

Research Article

Ecological Effects of Local Materials in Landscape Design based on Machine Learning

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The local characteristic landscape is a way of adapting to nature, land, and land space pattern chosen by local people due to their living needs. With the in-depth development of the concept of ecological protection in China, great progress has been made in the cause of ecological environmental protection within the current urban area. This study mainly discusses the ecological effects of local materials in landscape design. It integrates geography, historical literature, landscape ecology, architectural aesthetics, and many other related disciplines. The basic knowledge of rural landscape elements is analyzed and summarized from all levels and angles. However, due to factors such as the contradiction between the urban and rural dual system, the large base of the rural population and construction land, the expansion of cities and the great changes in rural production and lifestyle, the rural living environment is faced with more ecological contradictions, which has become the bottleneck of the country's overall ecological civilization construction. It comprehensively discusses and analyzes related concepts and theories, and optimizes the concept of rural landscape elements and the relationship between rural landscape elements and modern rural landscape design. It clarifies its classification and exemplifies the application methods of rural landscape elements. The second is to integrate and analyze the application of rural landscape elements through the investigation and analysis of excellent cases. It also compares the rural locality and studies the application of rural landscape elements and their shortcomings. Finally, the construction methods and application strategies of rural landscape elements in modern villages are proposed. Through the reasonable planning and configuration of the traditional village landscape, it creates a living landscape that can meet the actual needs of local people and an ornamental and experiential landscape that can meet the multilevel emotional needs of foreign tourists. This pushes traditional villages toward a benign path of sustainable development. The evaluation index of conformity between vernacular architecture and the environment reached 94%. On the basis of sorting out the problems of ecological planning and construction of rural human settlements, the article constructs the ecological adaptability theory of rural human settlement planning at the theoretical level. This study fully combines the advantages of local materials to build a beautiful village with regional cultural characteristics and ecological type, in order to open up new ideas for future rural planning and design.

1. Introduction

In recent years, with the acceleration of urbanization, China's rural landscape has experienced a stage of transition from traditional to modern, and many traditional village environments and vernacular buildings have been destroyed during this transition. The public space in the suburban villages carries the production and life of local residents as well as the leisure and entertainment activities of visiting tourists. It is an important place for people to carry out cultural display, communication, activities,

leisure and recreation, production, and life. At present, the treatment of public space in many suburban rural landscapes is blurred. Some public spaces are lacking, functions are lacking, features are lacking, landscape environment development is weak, and ecological environment is seriously damaged. Therefore, how to optimize the landscape design of the suburban and rural public space and make it into a diversified symbiotic landscape space with an outstanding culture, distinctive features, good ecology, and perfect functions is a problem worthy of our consideration.

At present, the use of modern new landscape materials has a considerable impact on the construction of local landscape materials. As a result, most of the landscapes are the same, which makes the local landscape materials lack regional blind spots in the application. China has adopted local landscape elements and local landscape materials in the construction of many regional characteristic landscapes. However, due to the lack of systematic theoretical guidance, in landscape construction, there are similar landscapes. This paper starts with local materials, and conducts in-depth research on the theory from the perspective of the landscape. It summarizes the ideas and application strategies of the excavation and inheritance of rural landscape materials, and makes its own contribution to the research of rural landscape materials. Local building materials have their unique natural attributes, combined with the use of materials, textures and colors, respecting traditional craftsmanship, and constantly innovating the application methods of local building materials.

From the perspective of the regional landscape, this paper summarizes the inheritance strategy of rural landscape materials and the construction ideas in rural landscape construction through the current application of rural landscape materials. This provides a reference for the protection and inheritance of regional culture and the application of local landscape materials in the future. Through the research on the application of local landscape materials, it provides a theoretical and practical reference for the application of local landscape materials in a similar landscape construction process in the future. This avoids the embarrassing situation of serious landscape homogeneity in landscape design. In addition, it is also hoped that through the research on rural landscape materials in this paper, the emphasis on rural landscape materials will be enhanced. It calls on people to respect and protect the local culture, and inherit and develop the local regional culture in a good environment. The innovative content is mainly reflected in the ecological adaptability research perspective, ecological adaptability analysis method, and ecological adaptability planning path of rural human settlement planning.

2. Related Work

Landscape performance often starts from these details, coordinates various parts of the landscape, such as local culture, regional environment, etc., and then achieves unity with the whole. Güngr believed that public space is one of the most important spaces in design when evaluating outdoor spaces. In his research, he surveyed court staff to reveal public agency standards and user needs. According to the results of the questionnaire, by revealing the positive and negative aspects of the court landscape design, solutions are proposed [1]. Ashour et al. evaluated the emotional restorative effects of different landscape designs on adults. He examines theories of aesthetic and emotional responses to landscapes in the Egyptian context by comparing the effects of two landscape environments with different visual design attributes on adult emotions. He conducted a quasi-experimental, causal contrasting case study of adult

participants walking through two spaces in Al-Azhar Park [2]. Matvienko et al. employed two techniques to characterize the initial residual stress values and their evolution near welded joints of aluminum sheets under low-cycle fatigue. The drilling method gives a high-precision correlation between the residual stress components and the number of cycles. The second approach involves modeling the crack through a narrow cut to describe the residual stress distribution over a wider spatial extent near the weld [3]. A G E investigated the effect of segregation on the hydrogen environmental embrittlement (HEE) of AISI 304L austenitic stainless steel. The microstructure of tensile specimens made of commercial AISI 304L steel was investigated by combined EDS and EBSD measurements. It was tested by small strain rate tensile tests in hydrogen at air and room temperature [4]. Ntamwira et al. evaluated simple macro propagation methods. The method builds on the onset propagation method for the production of banana seedlings in groups of four different cultivars in four unique agroecosystems. The average number of plants harvested per bulb, regardless of variety and location, was 7.5 plants under unfertilized semi-cylindrical tunnels and 12.6 plants under standard large propagation units [5]. The important role of paving in the landscape makes people pay more attention to the design of paving and the selection of paving materials. Whether it is pavement design or material selection, it must be unified with the overall style environment. It is necessary to consider not only practicality and environmental protection, but also artistry, aesthetics, and ecology. The vernacular building materials can act on vertical facades and landscape products. During the paving process, the shaping of its stable shape provides a solid guarantee. At the same time, local building materials are also carriers and important media of regional culture.

3. Application of Local Materials in Landscape Design

3.1. Local Materials. The rural landscape is one of the important components of rural construction. With the rapid development of social economy and culture and the accelerated progress of science and technology, the innovation of new materials has been promoted. Today, with the development of science and technology and social progress, new materials and new technologies are becoming more and more diversified, which makes the rural landscape in the rural landscape present various changes. At the same time, the phenomenon of landscape homogeneity is also very serious, and the regional culture and characteristics gradually disappear. At present, due to the convenience of information exchange, the phenomenon of cultural convergence is widespread. This development trend has huge drawbacks to the protection of regional local culture and the shaping of regional characteristics. The traditional local materials have positive significance and significant advantages in the protection and inheritance of local culture and the shaping and continuation of regional characteristics.

This paper fully studies the application of local landscape materials, which reflects the practical significance of saving,

ecological and sustainable landscape development. Under the background of unchanging landscape construction and lack of regional culture, the research in this paper not only has important practical significance for reproducing and reshaping local culture but also has an important guiding role for the local flavor in landscape construction. It helps to highlight the regional culture and regional characteristics of the rural landscape. This has important ecological significance for the regional protection and restoration of rural landscapes. Green design and ecological construction are the main themes of today's new era. Its in-depth research on local landscape materials can fully understand the current situation and existing problems in the use of local landscape materials in the ranks of landscape construction in China. It sorts and merges them in an orderly manner, and proposes corresponding reasonable and orderly solutions and practical application methods. This provides theoretical basis and reference for the construction of rural landscape design with strong regional and rural characteristics in the future. It also provides an important reference for the green, ecological and environmental protection landscape environment, and provides a certain theoretical basis and guiding value for the construction of beautiful countryside in the future.

3.2. Characteristics of Rural Landscape Materials.

Compared with modern materials, local landscape materials have obvious ecological characteristics. Under the influence of the region, it adapts to the local natural environment and integrates perfectly with the natural environment. In the long-term production and life process of people, it has ecological characteristics such as convenient material selection, original ecology, low carbon saving, convenient construction, renewable, and recyclable use. This is good for ecological balance. Some native plant materials have good adaptability and stress resistance to the local environment. At the same time, a stable ecosystem has been established for the local plant community.

The feature map output of the k th layer of the convolutional network is denoted as h^k . The weight and bias terms of the entire filter are W^k and b_k , respectively. Using the Relu nonlinear activation function, h^k can be defined as follows [6]:

$$h_{ij}^k = \text{Relu}\left(\left(W^k * x\right)_{ij} + b_k\right). \quad (1)$$

For the convolutional layer I with a convolution kernel K of $m \times n$, the convolution operation is defined as follows [7]:

$$S(i, j) = (K * I)(i, j) = \sum_m \sum_n I(i + m, j + n)K(m, n). \quad (2)$$

The formula of the two-category cross-entropy loss function is as follows [8]:

$$\ell_{bce} = -[y \log \hat{y} + (1 - y) \log(1 - \hat{y})]. \quad (3)$$

It fixes the parameters of discriminator D (back-propagation without parameter updates). The generator G is trained to generate binary images that are similar to real crack maps. The generator G uses a binary cross-entropy loss

function to optimize the model. For the generator model, the goal is to minimize the formula, which is expressed as follows [9]:

$$\sum_{n=1}^N \ell_{bce}(G(x_n), y_n) = \ell_{bce}(a(x_n, G(x_n))). \quad (4)$$

By combining the GAN network loss function with the L_1 distance function, the final loss function is shown as follows [10]:

$$\ell = \min_{\theta_a} \min_{\theta_G} \ell(\theta_a, \theta_G) + \nu L_1(G). \quad (5)$$

A traditional TTS system is shown in Figure 1. A TTS system usually consists of two parts: front-end and back-end. The front-end part is responsible for analyzing the text content entered into the system. It extracts the required acoustic feature parameter information for the back-end by means of prosody features and duration information prediction. The back-end synthesis unit part first uses the established model library to predict the acoustic features. These acoustic features are then adjusted such as pitch, loudness, and phoneme period. Finally, the adjusted and processed acoustic features are input to the back-end vocoder to synthesize speech. The use of local materials in the landscape reconstruction of village streets and lanes can reflect the unique regionality of the landscape, and the advantages of local materials can reduce the construction cost of landscape reconstruction.

The frame diagram of synthetic speech detection integrated with the ASV system is shown in Figure 2. The detection model is divided into four main parts: speech signal preprocessing, feature parameter extraction, classifier training, and model library matching. First, the speech signal of the training set is preprocessed to extract the acoustic features. Then the extracted acoustic features are put into the classifier for training according to a certain method. Finally, the acoustic model library is obtained. After the speech signal of the test set has undergone the same preprocessing and feature extraction as the above-mentioned training set, the recognition or decision strategy is used to match and compare with the established acoustic model library, and the detection result is obtained. Local materials with regional characteristics can evoke people's memories of the past and enhance people's cognition of local history and culture. From a regional perspective, local materials are all produced locally, which are widely available, easy to obtain, and convenient to transport, reducing production costs.

The preemphasis is processed through a simple transfer function, expressed as follows [11]:

$$H(z) = 1 - az^{-1}, \quad 0.9 < a < 1. \quad (6)$$

The number of frames for a speech signal of length N can be expressed as [12]:

$$fn = \frac{N - \text{overlap}}{\text{inc}} = \frac{N - \text{wlen}}{\text{inc}} + 1. \quad (7)$$

Among them, fn represents the number of frames after framing.

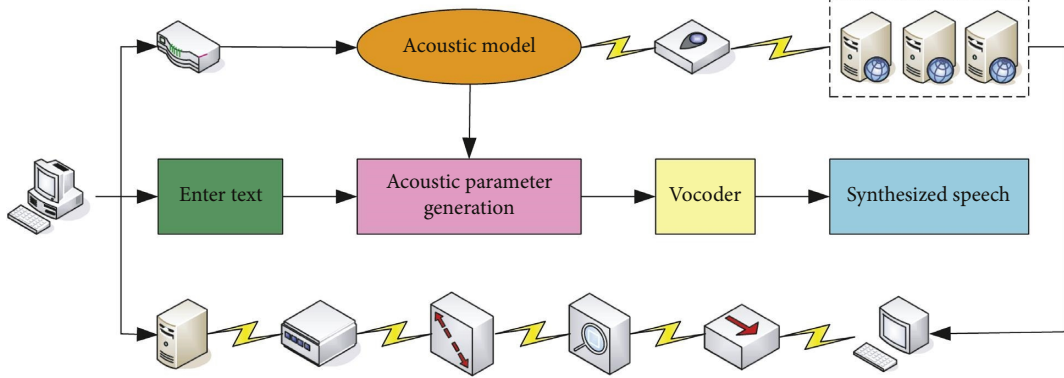


FIGURE 1: Traditional TTS system.

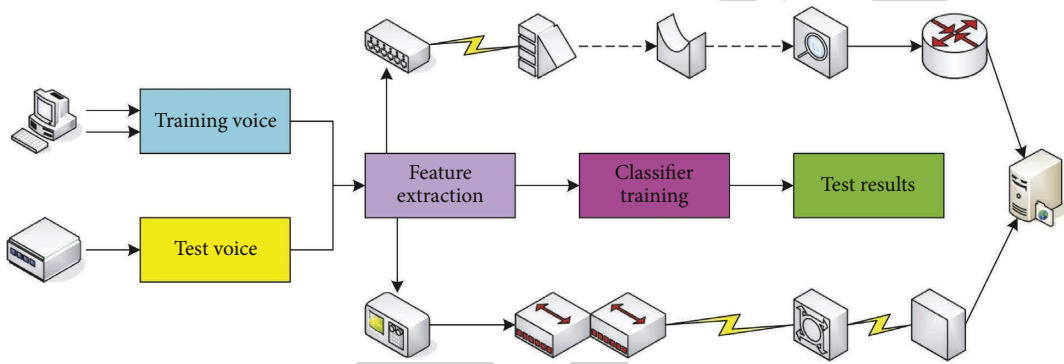


FIGURE 2: Synthetic speech detection framework diagram incorporating ASV system.

After the speech signal is framed, the short-term energy and short-term average zero-crossing rate of the frame are as follows [13]:

$$E(i) = \sum_{n=0}^{L-1} x_i^2(n), \quad (8)$$

$$Z(i) = \frac{1}{2} \sum_{n=0}^{L-1} |\text{sgn}[x_i(n)] - \text{sgn}[x_i(n-1)]|.$$

In the formula, $E(i)$ and $Z(i)$ are the short-term energy and short-term average zero-crossing rate of the i -th frame signal, respectively.

The transfer function $H(z)$ of the model is expressed in rational form as follows [14]:

$$H(z) = G \frac{1 + \sum_{l=1}^q m_l z^{-l}}{1 - \sum_{i=1}^p n_i z^{-i}}. \quad (9)$$

The input and output relationship of the model is expressed as:

$$x(n) = \sum_{i=1}^p a_i x(n-i) + G \sum_{l=0}^q b_l u(n-l). \quad (10)$$

Output $\hat{x}(n)$ is represented by a linear combination of the first p values. $\hat{x}(n)$ can be expressed as follows [15]:

$$\hat{x}(n) = a_1 x(n-1) + a_2 x(n-2) + \dots + a_p x(n-p). \quad (11)$$

The difference between the signal $x(n)$ and the predicted value $\hat{x}(n)$ is called the linear prediction error. It can be expressed as [16]:

$$\begin{aligned} e(n) &= x(n) - \hat{x}(n) \\ &= x(n) - a_1 x(n-1) - a_2 x(n-2) - \dots - a_p x(n-p). \end{aligned} \quad (12)$$

The resampled frequency points are DCT transformed, and finally, the CQCC parameters are obtained. The extraction expression is as follows [17]:

$$\text{CQCC}(p) = \sum_{l=1}^L \log |X^{\text{CQ}(l)}|^2 \cos \left[\frac{p(l - (1/2)\pi)}{L} \right]. \quad (13)$$

GMM can be understood as a weighted sum of multiple multidimensional probability density functions. These probability density functions are as follows:

$$p(x) = \frac{1}{(2\pi)^{n/2} |\Sigma|^{1/2}} \exp \left\{ -\frac{1}{2} (x - \mu)^T \Sigma^{-1} (x - \mu) \right\}. \quad (14)$$

The probability distribution of a Gaussian mixture model is defined as follows [18]:

$$p_M(x) = \sum_{i=1}^k a_i \cdot p\left(x|\mu_i, \sum_i\right). \quad (15)$$

The input signals of this neuron are x_1, x_2, x_3 and the bias b . These input signals are connected by weights, and the output is $h_{w,b}(x)$ as follows:

$$h_{w,b}(x) = f(W^T x) = f\left(\sum_{i=1}^3 W_i x_i + b\right). \quad (16)$$

Among them, W and b represent the weight matrix and bias of the neuron, respectively. f is the activation function. The activation function performs nonlinear processing on the output of the hidden layer to obtain the output of the neuron. A neural network can be formed by connecting a plurality of such neurons according to a certain structure.

A Lagrangian function method is constructed to find the optimal solution to problem with constraints in the following equation:

$$L(w, b, a) = \frac{1}{2}\|w\|^2 - \sum_{i=1}^N \alpha_i y_i (w x_i + b) + \sum_{i=1}^N \alpha_i. \quad (17)$$

According to the optimal solution, the following formula [19] can be obtained:

$$\begin{aligned} w^* &= \sum_{i=1}^N \alpha_i y_i x_i, \\ b^* &= y_j - \sum_{i=1}^N \alpha_i^* y_i (x_i^T x_j). \end{aligned} \quad (18)$$

3.3. Design Positioning. This design takes the local materials as the source, takes the image building of the eco-tourism area and the local customs garden as the theme, and takes the combination of the texture, color, place, and site relationship of the art as the starting point. According to the distribution, type, and combination characteristics of tourism resources in M city, it uses the combination of local materials to refine the different characteristics of landscape materials. Thus, a comprehensive park that includes urban life, humanistic life, and ecological life is created. Each functional division is interconnected and interpenetrated. It fully integrates the local materials of the urban place and becomes the focus of the park landscape.

3.4. Refinement of Local Materials. The characteristics of local materials mainly refer to regional and cultural characteristics, which originate from local natural conditions and social and cultural features, have a long history and originate from nature. There are two main forms of wood application in the park: one is to use the logs directly in the park, such as cutting the logs directly, as a water body revetment or a tree pond landscape. The other is to process the logs, after

grinding, coloring and polishing, and use them as railings, columns, walkways, flower stands, buildings, etc. in the garden. Different buildings have different design styles because of their different functions, different regions, and different groups of people they serve. Many scenic spots consider the people-oriented principle in the design process, and there will be corresponding buildings. It uses the corresponding buildings to serve people, whether it is a landscape building or a commercial building, as long as it is located in a scenic spot, it can be regarded as a scenic spot. Its style characteristics must be consistent with the surrounding environment and the larger cultural background.

3.5. Design Goals. The village takes the rich regional cultural landscape as the theme to display the historical and cultural heritage of the village. Through the combination of stone landscape ancient walls, wood carvings, stone carvings, and other landscape nodes with the surrounding landscape facilities, relying on the native plant community, the local culture is displayed. The division of space is clear and balanced. Through the stable proportional relationship of the entire park landscape, it reflects the entire axis landscape and overall spatial layout, providing tourists with an ecological place with cultural connotations.

3.6. Master Plan. The whole planning area of the village presents a high terrain in the north and a low terrain in the south, and a terrain high in the east and low in the west. The rich terrain height difference provides a good base condition for the site. The entire park clearly expresses the entire landscape layout of the park, effectively exerts the characteristics of local materials, and makes the ecological theme of the park more distinct. The layout of the park's spatial structure is magnificent and open. The contrast between light and dark spaces is a prominent feature, coexisting with the magnificent landscape axis inside the park, making the whole park more life-like. It consists of four parts: Wetland Square, Urban Leisure, and Culture Square and Sports Square. The wetland park area is mainly composed of native plants and aquatic plants. It cooperates with the red pine plank road viewing platform to provide people with ecological greening and healthy park greenways. The sports area is themed on a local folklore in an entertaining way. Through stone sculptures, granite landscape walls, and pine wood structure landscape nodes, it provides sports venues for tourists to increase the viewing of the landscape. Urban leisure parks mainly provide tourists with places of leisure and entertainment through large areas of hard pavement [20].

4. Landscape Design Ecological Effect Results

Within the administrative scope of M city, there are 11 districts, 2 counties, and 1 national-level new district under the escrow. There are 13 urban homestay clusters and 17 country homestay clusters, of which 60 are key villages for rural homestay construction. The city develops rural homestays in the well-known beautiful countryside,

characteristic landscape towns or cultural towns, traditional villages, leisure farms, rural tourism demonstration villages, and other areas in the country homestay cluster. Therefore, the excavation and application of local landscape materials provide the basis for its development and construction. The construction classification of country houses in M city is shown in Figure 3.

The practicality of color in life has a long history. The source of people's perception of color is also obtained from life. For example, the orange-red hue is warm, giving people a warm, lively and happy feeling, and there is also a revolutionary and heroic feeling in the war years. Blue belongs to the cool color system, giving people a feeling of peace and tranquility, while green is kind and limited, giving people an elegant and fresh natural visual experience. Different colors can mobilize people's different psychological changes. From an aesthetic point of view, the rural landscape material is the object that carries the rural world, and the factor that pursues natural beauty and harmony between man and land. In today's urbanization development, re-examining the aesthetic relationship between the environment and people is also a breakthrough in the original aesthetic category with art as the core. Local landscape materials with different color properties also recombine new visual landscape units. The color matching of different stones is shown in Table 1.

The scene made of wood is warmer in terms of color and warmth, giving people a sense of heaviness and showing the vicissitudes of the scene. Brick and stone materials are selected for the scene, the overall tone is stable. Under the collision of the simple warm local color and the cool stone, it shows the momentum of the scene with a long history. The scene collocation of different wood colors is shown in Table 2.

M Village is located in the subtropical area, which belongs to the marine subtropical monsoon climate, and its climate is characterized by warm and rainy, sufficient sunshine, long summer, and short winter. The annual average maximum temperature is 32.1°C; the coldest month is January, and the minimum average temperature is 0.9°C. The annual average relative humidity is 77.5%, with the highest relative humidity being 50% in April, May, and June; the relative humidity in November and December is the lowest at 33%. The humidity and temperature changes in M village are shown in Figure 4.

The annual rainfall in M village is about 144.8 mm, among which, the precipitation is the largest in May, about 283.7 mm; the least precipitation is in December, which is 31.6 mm. Throughout the year, the rainy season is from April to June, and the typhoon season is from July to September. The variation of annual rainfall in M village is shown in Figure 5.

The roadway has a history of more than 300 years, there are 7 places in total, and the total length is about 1500 meters. They are now fully hardened and have a width of 1.5–1.8 m. The original roadway and the rest of the trails were all paved with the same siltstone slabs from other places, which lacked recognition and regional characteristics, and the landscape effect was single. Now consider using silt stone slate only in the roadway, and use other materials

for the rest of the trails. The material of the roadway echoes the rest of the nodes, and is more characteristic of M Village. At the same time, it is mixed with gray-washed stone to increase the landscape level and reduce the cost. The use of rustic materials for the roadway is shown in Figure 6.

There is a fire pool in the north of M village, with an area of about 566 square meters. After investigation, it was found that the fire pool was dry, the bottom of the pool was hardened concrete, and the revetment was siltstone block stone masonry. Its overall landscape effect is monotonous, the hard revetment leads to poor hydrophilicity, and the surrounding plants are cluttered. On the original basis, a waterproof layer is added to the pool and paved with thick stones to increase the ecology of the water body. The revetment uses natural weathered granite, which breaks the regular revetment line and increases interest and hydrophilicity. Aquatic plants make water more active and purify water. The rural material plan for the fire pool is shown in Figure 7.

In recent years, the research trends in the fields of local materials, local material landscape, and rural landscape design are shown in Table 3. It can be seen that research on rural areas is on the rise in recent years.

Natural rural landscape elements, as the name suggests, have a great relationship with the natural environment. Its formation mainly depends on natural factors, such as climate, water, plants, materials, landforms, and other elements. These natural factors work together and combine organically to form the most basic elements of the rural landscape, which lays the foundation for the construction of the rural landscape and is indispensable for the construction of the rural landscape. The natural situation of the region is different, so the elements of the rural landscape are very different, forming a landscape pattern with regional colors. The influencing factors of different rural landscapes are shown in Table 4.

The landscape element of the local humanistic spirit is not a landscape element that can be seen and touched, it is an ideology and a spiritual product. The characteristics of traditional folk customs, religious beliefs, and geomantic concepts are shown in Table 5.

The characteristic of the layered analysis method is to use less quantitative information to mathematicalize the thinking process of decision-making on the basis of an in-depth analysis of the nature, influencing factors, and internal relationships of complex decision-making problems. Therefore, it provides a simple decision-making method for complex decision-making problems with multiobjective, multicriteria, or no structure characteristics. Using the analytic hierarchy process and processing the data through the computer, the calculated comprehensive weights of each ecological effect factor are shown in Table 6.

In rural settlements, the degree of fit between rural architecture and the environment plays an important role in the construction of rural characteristic landscapes. Ten local villagers were invited to rate the degree of conformity between vernacular architecture and the environment, and the highest score that was considered very good was 94%. The compatibility is between vernacular architecture and

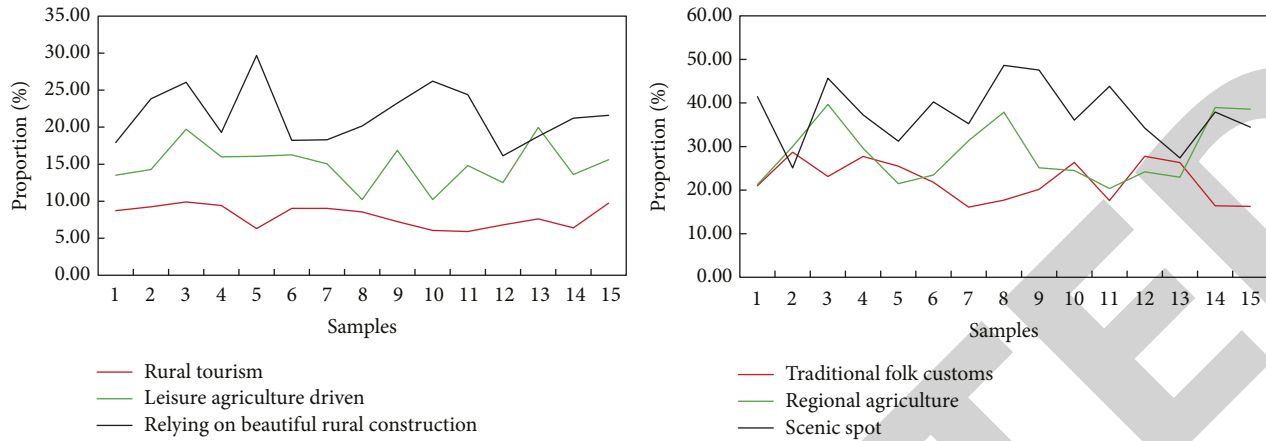


FIGURE 3: Classification of country house construction in M city.

TABLE 1: Color matching of different stones.

Material	Color code		
	R	G	B
Stone	233	217	177
Brick	137	133	121
Water	72	77	37
Lantern	22	22	22

TABLE 2: Scenarios with different wood colors.

Material	Color code		
	R	G	B
Stone	233	239	339
Brick	339	333	333
Water	92	99	39
Lantern	33	33	33

environment. The fit degree evaluation of the environment is shown in Figure 8.

Through the investigation of ecological agriculture parks in M City, it can be seen that 56% of the parks have a clear and accurate development orientation, and 44% of the parks lack an accurate and clear development orientation. Mountainous urban ecological agricultural parks with accurate and clear positioning tend to have higher popularity and maintain a longer vitality. At the same time, among these eco-agricultural parks with clear and accurate development orientations, the vacation ecology is the most characteristic, and agricultural development is the second characteristic. The economic benefits of ecological agricultural parks with these two types as the development orientation are relatively higher. Figure 9 shows the positioning and development of the ecological agriculture park in M city.

5. Discussion

Rural landscape is the matrix landscape of Chinese territory, so Chinese society is rural. In the course of thousands of years of development, Chinese countryside has formed a

landscape with rich characteristics. It not only bears the functions of rural ecology and rural resources but also bears the role of rural cultural symbol and spiritual connotation. With the continuous acceleration of China's economic construction, the development and construction of rural areas have gradually been paid attention to.

In the course of human development, the countryside is the most primitive living environment for human beings, and it is the living form that human beings depend on for survival. For a long time, the countryside has been at a disadvantage in the relationship between urban and rural areas, and the root cause is that the value of the countryside and the rural landscape has not been systematically recognized. In the development and replacement of human society, due to the succession of nature and the interaction between man and nature. The countryside is endowed with ecological environmental landscapes such as mountains, rivers, forests, deserts, lakes, and grasslands, and human and social landscapes such as villages, buildings, farmland, fish ponds, and orchards. It plays a vital role in maintaining ecological balance, promoting economic development, inheriting regional culture, and assuming aesthetic values. It is the supplier of natural resources and the undertaker of infrastructure in urban areas.

China has vast rural areas. The rural landscape takes the rural area as the spatial carrier. In addition to the small proportion of the village living environment, there is also a very high proportion of natural ecological environment including forests, grasslands, wetlands, rivers, lakes, oceans, and other natural resources. It plays an indispensable role in conserving water sources, sequestering carbon and producing oxygen, purifying the environment, providing habitats, and maintaining biodiversity. The ecological nature of the rural landscape is also reflected in the balance of urban ecology. Urban ecology is a human-centered artificial ecosystem that combines nature, economy, and society. Ecosystem homeostasis is highly susceptible to human activities. The countryside can deliver material elements such as clean air and water to the city, maintaining the stable operation of the urban ecology.

China is an ancient civilization with a vast territory and numerous ethnic groups. The climatic conditions and geographical conditions are different in different parts of the

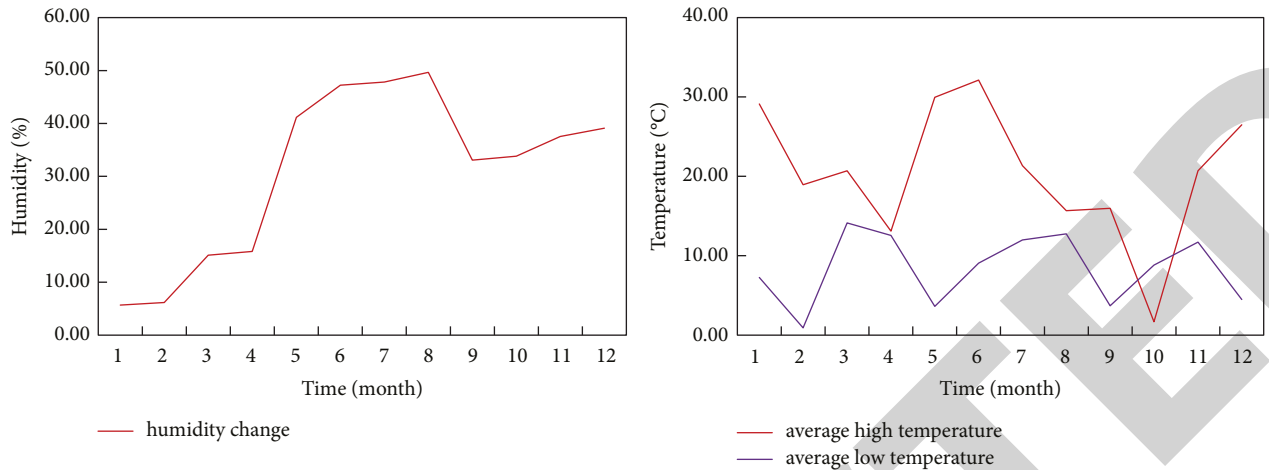


FIGURE 4: Humidity and temperature changes in village M.

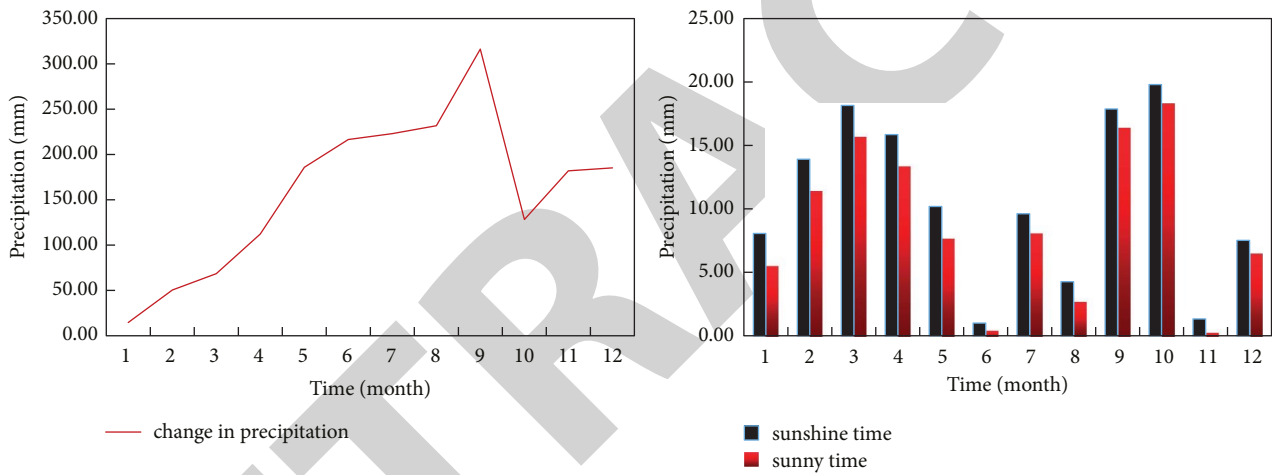


FIGURE 5: Changes in annual rainfall in village M.

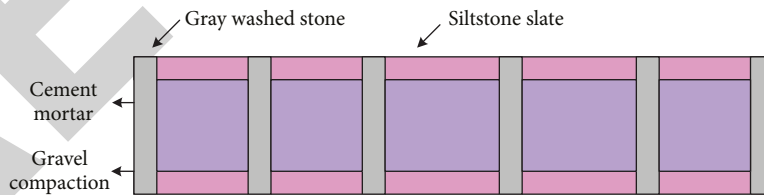


FIGURE 6: Rustic material use in roadways.

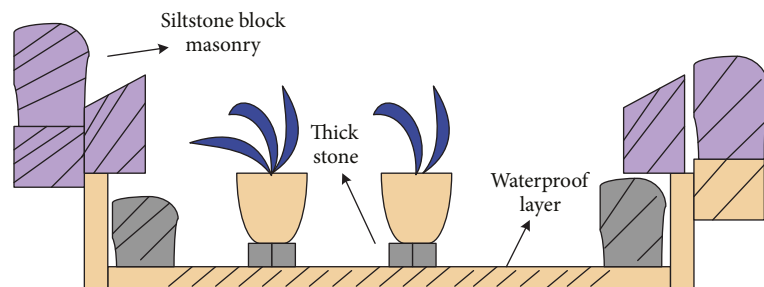


FIGURE 7: Rustic material plan for fire pool.

TABLE 3: Research trends in the fields of local materials, local material landscapes, and rural landscape design.

Source	Local materials	Local material landscape	Rural landscape design
Wanfang data knowledge service platform	224	201	189
CNKI China knowledge network	151	88	80
Chinese science and technology periodical database	33	22	20

TABLE 4: Influencing factors of different rural landscapes.

Serial number	Types of rural natural landscape elements	Local material landscape
1	Material	Variety and economical
2	Color	Symbolic
3	Climate	Non-portable, regional

TABLE 5: Landscape elements of local humanistic spirit.

Serial number	Types of landscape elements of local humanistic spirit	Landscape element features	Example
1	Traditional folklore	Adherence, regional	Wedding and funeral scenes
2	Religious belief	Diversification	Totem patterns, religious figures
3	Feng shui concept	Abstract	Round sky, etc.

TABLE 6: Comprehensive weights of ecological effect factors.

Serial number	Indicator layer	Indicator layer weights
Topographic hydrology	D1 landscape ecology	0.2412
	D2 aesthetics of the environment	0.0345
Native plants	D3 species diversity	0.0249
	D4 local characteristics	0.1247
Local materials	D5 material richness	0.0737
	D6 material usage rate	0.0318

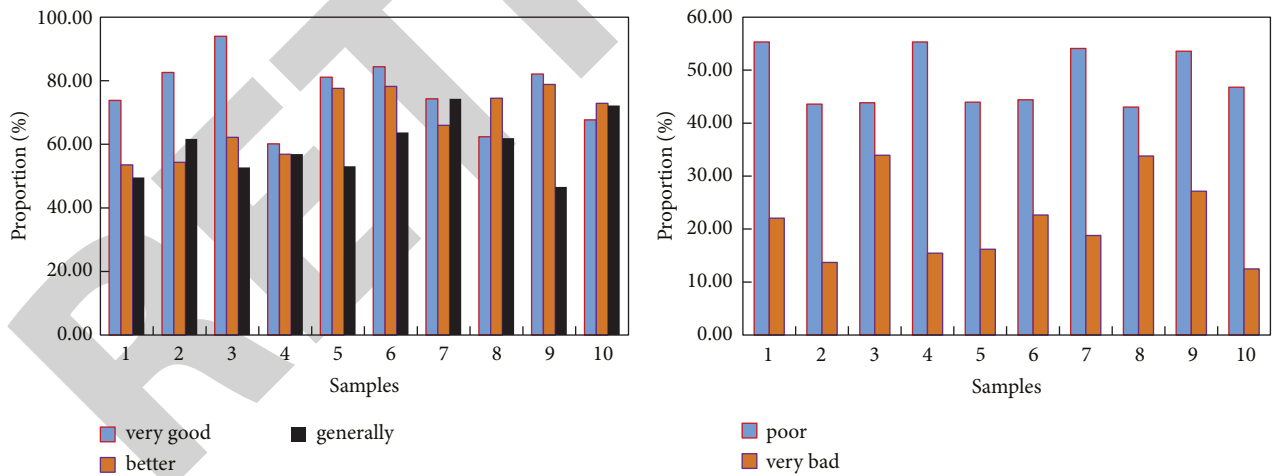


FIGURE 8: The fit degree of vernacular architecture and the environment is the fit degree evaluation of the environment.

country, and the production and living conditions are rich and diverse, which breeds distinctive regional cultures. As a big agricultural country, China's regional culture is rooted in the countryside. Rural landscape reflects the local folk customs in a specific social and historical stage, is an important window for modern society to identify historical development and form value judgments, and is an important carrier of regional cultural heritage. Under the background

of economic globalization, fully excavating the traditional cultural value of rural landscape will be a solution to the crisis of regional cultural characteristics faced by China's urban and rural development.

Under the background of global economic integration, the continuous expansion of foreign culture further compresses the living space of local culture, and the local characteristic landscape is gradually neglected and eroded.

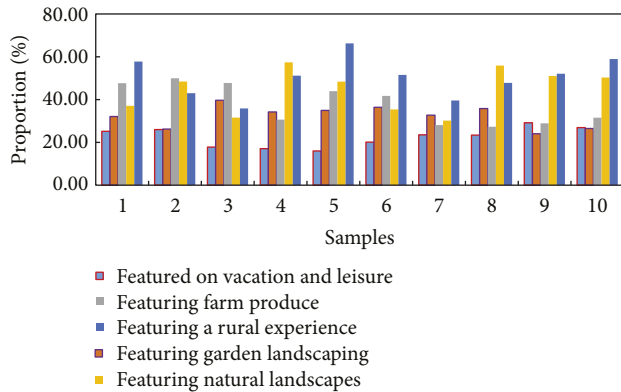


FIGURE 9: Positioning and development of ecological agriculture park in M city.

However, rural areas located in remote and economically backward areas are faced with the problem of labor transfer and large-scale out-migration of rural aborigines. The lack of the key element of “people” has resulted in the gradual disappearance of regional culture with local characteristic landscape as an important carrier. The root of the problem of rural landscape at this stage lies in the neglect and lack of the construction of rural characteristic landscapes. The local characteristic landscape has ecological, regional, and cultural characteristics. In this context, it is necessary to retrace the essence of rural landscape, explore the constituent elements and activation methods of rural landscape, and finally realize the benign development of rural landscape.

When people return to their hometowns, they begin to feel disgusted with the villages they once lived in, their cultural identity declines, and they are even reluctant to return to the countryside, or they want to remake the countryside according to their ideas. Due to the lack of correct understanding and correct guidance of rural landscape and ecological environmental protection, many villages gradually show the scene of the urban landscape. Traditional dwellings have been replaced by fashionable modern buildings, traditional folk crafts and arts have been lost, folk activities have been neglected, and the inheritors of rural culture have become increasingly absent.

Although the original natural environment structure of the countryside has not been planned by the modern planning system, it is deeply influenced by the traditional Feng Shui concept. The overall layout of the village pays attention to the mountain and water, and the harmony between man and nature. The overall layout of the village conforms to the changes in the surrounding natural environment and perfectly integrates with nature. The construction of rural landscapes is also based on a certain function, and various landscape materials are also selected from local materials. However, with the development of society, the primitive rural environment cannot satisfy people’s desire for innovation and variation. However, the countryside often lacks professional design and management personnel, which leads to the introduction of a large number of urban landscapes into the countryside, which is incompatible with the rural environment. In addition, in

order to attract people’s attention, some rural landscape designs build large-scale spaces, such as large lawns and structures with strange shapes, which not only lead to the deformed development of rural landscapes but also destroy the local natural environment.

With the rapid development of science and technology, the rapid development of network information, the emergence of new materials, the continuous deterioration of the ecological environment, the gradual decline of the recognition of regional culture, and the convergence of rural landscape design models, it is not conducive to the protection and inheritance of traditional Chinese culture and regional characteristics. While the local materials are of great significance for the protection of regional characteristics and the inheritance of traditional culture. This paper conducts research on the basis of scientific theory, analyzes, and summarizes the relevant research contents of the predecessors for local materials, and clearly defines the concept of local materials. And innovate on the basis of the existing theory, enrich and supplement the expression techniques and construction modes of local materials in the rural landscape.

It can provide a reference for rural landscape construction work. The local materials with a long history behind them carry culture, are rooted in places, and are full of regional characteristics. If it is applied in the design of rural landscape reconstruction, it will evoke the memory of the past in the viewer’s mind in the created landscape space, and can enhance people’s understanding of local history and culture.

In recent years, with the rise and development of rural tourism, more and more urban residents have turned their tourist attention from the previous urban attractions and famous mountains and rivers to the rural landscape attractions mainly based on rural scenery and farming experience. On the one hand, this change has made the countryside more open, exposed to more advanced urban resources and modern lifestyles, promoted the upgrading of rural industries to the primary, secondary and tertiary industries, and led to the growth of the rural economy. On the other hand, it also promotes the urbanization of the rural landscape and the transformation of the traditional handicraft industry in the countryside to mechanization and commercialization. The good natural ecological foundation is also threatened by the increase in passenger flow. Also with the development of tourism, some ancient villages with unique natural and cultural resources have been excavated and developed, attracting a large number of urban tourists, where they can experience a different way of life from the city. People from different cultural backgrounds communicate more frequently, resulting in the collision of multiple cultures, which are bound to penetrate each other, and the way of life in rural areas is also changing under the influence of subtle influences. For example, villagers gave up the agricultural industry that was the main source of income, and began to develop farmhouses and homestays on the basis of their own buildings and the surrounding environment. The traditional busy scene of spring plowing and autumn harvest gradually disappeared and became a kind of

memory, while the originally quiet and quaint living atmosphere of the countryside was impacted.

Local materials are easy to obtain and economical, whether it is preconstruction or postmaintenance, the dismantled waste materials are easily integrated into the natural environment. Most of the local materials can be reused. This is also in line with the strategic goal of sustainable development. The construction process is simple, which can minimize the input of manpower and material resources, and at the same time, because of the wide distribution of local materials, the cost in the process of selection and transportation is saved.

Compared with modern new materials, local materials have obvious ecological properties. Construction is convenient, taken from nature, used for nature, attributed to nature, renewable, sustainable, and conducive to maintaining ecological stability and balance. The soil, wood, tile, brick, bamboo, etc. in the local materials all come from nature. As the material carrier of rural landscape design, local materials play a very important role in the formation of regional landscapes and the promotion and inheritance of regional culture. They record the process of coordination and adaptation between man and nature and are also the inheritance of people's rational thinking on landscape design in life. China has a long history and rich cultural heritage. Local materials are an indispensable part of traditional Chinese architecture and landscape, and are the great wisdom of the Chinese nation. It not only inherits the materials but also has a long history and culture and traditional construction and decoration skills.

With the development of the times, urbanization is an inevitable trend of rural modernization, and it is also the expansion of modern civilization to rural areas. Due to the irreversibility of the rural urbanization process, we must pay attention to the construction of the rural cultural ecosystem in this process, so as to retain our beautiful rural memory. The country has also paid more and more attention to rural planning, and a series of documents on rural construction has appeared. In the process of rural development, problems such as lack of regional characteristics and "illages are very similar" have gradually emerged. Under the influence of contemporary new technologies, new materials and new craftsmanship, the local materials themselves are also constantly developing. In the rural landscape design, the local materials are fully and reasonably integrated to create a harmonious rural landscape with regional characteristics and cultural connotations.

The current scale of urban park green space construction is unprecedented. Urban park green space not only has the functions of recreation, ecology, landscape, and disaster prevention but also has the function of showing local history and culture to tourists. The application of rural landscape elements in urban parks and green spaces can make tourists feel the history and culture of the city in a mood of leisure, entertainment, and relaxation. It can also make people touch the real objects that touch the hearts of tourists and record the history of the city, and even make the tourists feel the feelings of the city. The application of rural landscape

elements in urban parks makes the landscape truly return to the real life of urban residents. Following the original spirit of the local landscape is the foundation of landscape design innovation and a rich source of inspiration for new landscape design.

China is in the process of urbanization and rapid economic growth, which also brings corresponding problems. Among them, the destruction of historical relics, the threat of historical culture, the loss of the original characteristics of the city, the imbalance of ecology, and the blind worship of foreign countries are the more prominent problems. "Rural landscape" is a comprehensive reflection of local characteristics and local culture, plain, and simple. The ingenious and reasonable use of rural landscape elements in contemporary urban landscape design reflects people's rural feelings and is most likely to resonate with people. Today, it has become the responsibility and obligation of landscape architects to excavate local characteristics, protect and rationally utilize local resources, and reasonably apply them to the construction of urban parks and green spaces.

6. Conclusions

With the proposal of rural revitalization, the localization of rural landscapes has become a topic of concern. The local elements are the symbols and materials used for the construction of the local landscape, which can express and inherit the rural spiritual and cultural connotation. Based on the existing research foundation, this paper attempts to classify and evaluate the constituent elements of local characteristic landscapes, to explore the application of the constituent elements of the local characteristic landscape in the planning and design of the rural landscape. And provide some reference for rural landscape construction, and lay the foundation for further exploration of the methods of rural landscape design. This paper deeply studies the relevant theories of the local characteristic landscape, clarifies the relevant concepts, and lays the foundation for the formation of the strategy. And the author consults and summarizes the constituent elements of the local characteristic landscape in the literature, seeks a detailed classification of the constituent elements of the local characteristic landscape, and establishes a perfect evaluation system. Based on the results of the evaluation system, this paper explores the expression and utilization mode of the constituent elements of the rural characteristic landscape in the rural landscape, and summarizes the activation strategy of the rural characteristic landscape. This paper attempts to apply the obtained activation strategy to the actual construction of rural landscapes to make it have practical significance. Enriching and perfecting the theory of rural elements, forming a set of theoretical framework systems, has great guiding significance for rural landscape design.

Data Availability

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

Disclosure

The author confirm that the content of the manuscript has not been published or submitted for publication elsewhere.

Conflicts of Interest

The author declares that there are no potential conflicts of interest in our paper.

Authors' Contributions

All authors have seen the manuscript and approved it to submit to your journal.

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