Research Paper

The Value Evaluation of Urban Historical Landscape Based on the Analysis of Its Evolution Characteristics

Take Taiyuan, China as an Example

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Abstract

Based on the concept of HUL, the evaluation system of urban historical landscape is constructed by AHP analysis method, and 357 heritage sites in Taiyuan city are evaluated quantitatively. The evaluation results are made into the historical landscape value distribution map of the whole city by GIS. It shows that the historical landscape value of Taiyuan city has the characteristics of linear concentration in the east and decentralization in the west, in which the main urban areas in the east form two overall value highs; in addition to other historical and cultural landscape areas with high protection value, the overall protection status is not good and the integration with the city is not high. Finally, based on the evaluation results, it can be seen that the spatial distribution of historical landscape types in Taiyuan are directly related to the landform of mountains and rivers. The geographical location of Taiyuan directly determines the different strategic positioning of military, economic and transportation in different historical dynasties, which leads to the aggregation characteristics of heritage landscape according to the time period. In addition, it is recommended that building a linear corridor planning proposals to protect the cultural heritage in Taiyuan, based on the analysis result.

Keywords

Historical urban landscape (HUL); Landscape value assessment; Characteristics of spatiotemporal evolution; AHP; GIS; Taiyuan

1. Introduction

An in-depth discussion of the connotation, characteristics and value of the historical city landscape (HUL) has resulted in the Vienna Memorandum since 2005. UNESCO's proposal on historic urban landscapes in 2011 is the pinnacle of conservation approaches (Aysegul, 2016). HUL is defined as the product of spatial stratification of history and culture in different periods (Yao and Che, 2018). This definition puts forward a more comprehensive research perspective, emphasizing that HUL is the final performance of cultural heritage by combing the context of urban development Spatiotemporal characteristics(Garau et al., 2020).HUL is now widely understood as a concept of urban cultural landscape protection. This concept emphasizes the dynamic superposition of historical relics and cultural landscape in time and space, namely layer. As Lewis Mumford said, cultural relics embody the value of noumenon, while the city, as a container of culture, is the value of a process. More and more researches focus on the spatial evolution of urban cultural landscape in different historical periods, so as to explore the rich historical value of urban cultural
landscape (Kallast, 2020, Marina Sanchez, 2019), and even form the urban landscape positioning with historical value as the core (Santibanez Coronado et al., 2020). Unfortunately, due to the development and growth of transportation, communication and production technology, the environmental value of cities is rapidly consumed (Antrop, 2004). Due to the neglect of cultural heritage, the spatial characteristics began to disappear, and cities lost their unique quality and began to like each other. Urban development is changing the face of historic cities and their environment, especially in developing countries that emphasize economic development and modern urban construction (Tobias et al., 2018, Cengiz and Tay, 2018). Under the background of rapid urbanization, most of the historical urban landscapes in China are facing a sharp decline in the process of urban expansion and renewal (Yao and Che, 2018). At this critical moment, these cities with a long history but not developed enough should look for urban regeneration planning from the historical protection of urban cultural landscape, so as to complete this indispensable basic link of construction demonstration. The development trend of contemporary urban landscape planning and design emphasizes the scientific design and construction process, and highlights the integrated design of environmental space, place, function, culture and technical support. Therefore, for the protection of urban historical and cultural heritage, or based on the long-term urban planning and development, we need to find a more comprehensive method to understand the value of urban historical landscape from the perspective of HUL.

Analytic Hierarchy Process (AHP) is a powerful and flexible multi criteria technology (Forman and Gass, 2001, Vaidya and Kumar, 2006). In landscape assessment and planning, it can integrate expert advice and actual situation and balance all aspects of decision-making elements, so as to reduce the bias in decision-making (Agapiou et al., 2015, Romano et al., 2015, Sun and Liu, 2010). Obtaining information and data from digital images is a useful tool to understand city space and structure from the perspective of landscape. Landscape measurement can not only objectively display the cultural landscape in the city, but also visually express the characteristics of HUL over time. Therefore, most of the issues related to landscape assessment need methodology that can be integrated into geographic information system (GIS) (Murray and Tong, 2009), which is a powerful tool for managing, transforming and representing geographic reference data. GIS supported spatial conceptualization can better understand the specific characteristics of the site and reflect the spatial attributes of HUL (Stephenson, 2008). Moreover, the overlay of layers in different periods and the representation of different value gradients can provide more powerful support for understanding the organization of urban space (Bridges et al., 2007).

Therefore, the combination of AHP and GIS can capture the qualitative and quantitative elements of decision-making and provide a powerful and simple method of weighted selection criteria, so as to reduce the deviation in decision-making (Ma et al., 2005). The generalization space supported by GIS can better understand the specific characteristics of the site (Blaschke, 2006). This method transforms the preferences and assessments expressed by experts and other stakeholders as landscape data into continuous spatial gradients (Brown and Raymond, 2007), which can obviously restore the value of urban historical landscape to urban spatial pattern for identification and evaluation.

2. Methods

Cultural relics and historic sites are HUL elements in the city, and their individual quality will strongly affect the spatial value of the whole cultural landscape. Each landscape element inevitably determines the gradient of the environment in which the quality of its environment is inversely proportional to its distance. In fact, when the distance from the element is reduced, the perception of the element increases (not only visually, but also through other information vectors) (Vizzari, 2011). This study guides the establishment of the evaluation system through the value of cultural heritage itself and its relationship with the surrounding
environment, so as to realize the value assignment of the historical landscape of the whole city. On this basis, the visualization display and analysis are realized by using GIS.

2.1. Evaluation system

2.1.1 Selection of evaluation elements

Among them, it should be noted that factor selection must ensure that each assignment is quantitative and easy to get the score to show a clear indication of historical and cultural value. Finally, the evaluation system of urban historical landscape value is determined (Figure 1).

Identifying and screening the elements of value evaluation is the first step to construct the evaluation system. Referring to the research results of urban historical heritage value evaluation generally accepted in China (Ling, 2010, Yanyan, 2015, Meiping, 2006, Yishan and Jian, 2008), combined with the principles of cultural heritage protection, and consulting experts' opinions on urban planning and heritage protection, the intermediate criterion layer and corresponding factor layer under the evaluation objective of urban historical landscape value are finally determined.

2.1.2 Index judgment matrix

Due to the different proportion of various evaluation criteria in the process of measuring the value of urban historical landscape, the relative importance of evaluation indicators of historical culture should be judged and assigned. First of all, professionals are asked to measure the importance of factors at all levels, and on this basis, their reciprocal are cited as the evaluation scale of factor importance. Then, the weight value of the relative importance of each level factor is calculated by the combined product method to complete the hierarchical single ranking and calculate the consistency ratio (CR):

$$CR = \frac{CI}{RI}$$

Where: CI stands for consistency index, and its calculation formula is $CI = \frac{\lambda_{max} - n}{n - 1}$. RI means random consistency index, and its values are shown in the Table 1. If CR < 0.10, matrix consistency is considered acceptable (Table 1). The urban historical landscape value index system and its weight assignment can be obtained by completing the calculation and checking calculation process.

Table 1.Value table of average random consistency index RI. Source: (Jianjun, 2005).
2.2. Sub item value evaluation

According to the established "urban historical landscape value evaluation system", 15 factors were assigned to 357 heritage sites. Among them, the factor assignment of protection status (B1) and noumenon values (B2) comes from the existing heritage information data, which can be obtained by Python and converted into digital fuzzy level.

The factor assignment of B1 and B2 come from the existing heritage information data, which can be obtained by Python and converted into digital fuzzy level. The factor discrimination of Urban integration (B3) mainly uses GIS platform calculation, artificial identification and field investigation. The specific operation methods are as follows:

1. The city map is imported into ArcGIS, and the proximity between POI heritage site and surrounding parks, main roads and residential areas are obtained by using the centrality distance tool (C_d).

\[ C_d = \frac{1}{n - 1} k_1 \]

Where n represents the number of nodes in the network, and \( k_1 \) is the total number of nodes directly related to node. The assignment principle is: search for the centroid of urban parks residential areas and road nodes within 1000m (15min walking distance) of each POI heritage site. These digital assignments can be obtained by \( C_d \) which are ecological integration degree (C11), traffic connectivity degree (C13) and residential area correlation degree (C14).

2. The visual dominance (C12) and memory relevance (C15) of POI were determined by manual identification and field visit.

2.3 Spatial analysis method

AHP evaluation information of all heritage sites are collected as a data table and imported into GIS, in which the parameters and weights results of POI are included in the attribute table. Using the tools of kernel density analysis (KDE) in GIS, the value assignment of urban historical landscape can be generated into continuous gradient, and the spatial and visual identification and expression can be realized. It must be noted. The evaluation of historical heritage value focuses on the merits and demerits of urban historical landscape, and more importantly, it pays attention to the "characteristics" of urban historical landscape, emphasizing the differences and diversity of urban historical landscape in time and space. The final evaluation results include: GIS database of regional historical relics, analysis of urban historical landscape characteristics, and landscape characteristics and regional description results of the study area in graphic language.
3. Study area and data

3.1. The historical and cultural city of Taiyuan

Located in Shanxi Province, China, Taiyuan has a unique geographical location, because it is the intersection of Chinese grassland culture and Central Plains culture (shuj, 2003) (Figure 2). In the process of the rise and fall of various regimes and different dynasties in history, Taiyuan was always the military, cultural and economic center of northern China. The important driving force of Taiyuan’s historical and cultural evolution comes from the swing and alternation of different cultural circles, production and life patterns in this area. Taiyuan’s long urban history can be very typical of a cultural diversity and deposition process (Bing, 2014). The historical characteristics of overlapping cultural layers leave Taiyuan with rich and diverse cultural remains (Wu, 2014). In addition, Taiyuan has gone through four urban master plans from 1954 to 2020. In these processes, historical and cultural remains show fragmentation phenomenon (Chaohui, 2018). Therefore Taiyuan can be used as a typical historical urban landscape research area.

![Figure 2 Location and topographic map of Taiyuan. Source: painted by author.](image)

3.2. Data

Taiyuan’s material and cultural heritage sites is the main research object, and we collected data from the Taiyuan Municipal Bureau of Culture and Tourism. Using Python to get cultural heritage POI (point of interest) information to form the basic database; through field investigation and artificial interpretation of satellite remote sensing images to correct the suspected POI longitude and latitude data. Finally, 357 effective historical heritage POI in the research scope were obtained (Figure 3).

![Figure 3 Distribution of heritage sites in Taiyuan. Source: painted by author.](image)
4. Results and discussion

4.1 Construction of value evaluation system of HUL

On the basis of completing the importance survey of each evaluation index through expert inquiry, the relative importance judgment and matrix consistency checking of each level factor are carried out (Table 2-5). After verification, the weight assignment of urban historical landscape value index is obtained (Table 6).

Table 2 The calculation process of judgment matrix from layer B to layer A (CR: 0.0089).

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B1</th>
<th>B2</th>
<th>B3</th>
<th>Wi</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>1</td>
<td></td>
<td>0.3333</td>
<td>0.5</td>
<td>0.1638</td>
</tr>
<tr>
<td>B2</td>
<td>3</td>
<td>1</td>
<td></td>
<td>2</td>
<td>0.5390</td>
</tr>
<tr>
<td>B3</td>
<td>2</td>
<td>0.5</td>
<td>1</td>
<td></td>
<td>0.2973</td>
</tr>
</tbody>
</table>

Table 3 The calculation process of judgment matrix from layer C to layer B1 (CR: 0.0248).

<table>
<thead>
<tr>
<th></th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
<th>Wi</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>1</td>
<td>0.2</td>
<td>0.1111</td>
<td>0.5</td>
<td>0.2</td>
<td>0.0424</td>
</tr>
<tr>
<td>C2</td>
<td>5</td>
<td>1</td>
<td>0.3333</td>
<td>3</td>
<td>0.5</td>
<td>0.1776</td>
</tr>
<tr>
<td>C3</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>0.4740</td>
</tr>
<tr>
<td>C4</td>
<td>2</td>
<td>0.3333</td>
<td>0.2</td>
<td>1</td>
<td>0.3333</td>
<td>0.0779</td>
</tr>
<tr>
<td>C5</td>
<td>5</td>
<td>2</td>
<td>0.3333</td>
<td>3</td>
<td>1</td>
<td>0.2281</td>
</tr>
</tbody>
</table>

Table 4 The calculation process of judgment matrix from layer C to layer B2 (CR: 0.0797).

<table>
<thead>
<tr>
<th></th>
<th>C6</th>
<th>C7</th>
<th>C8</th>
<th>C9</th>
<th>C10</th>
<th>Wi</th>
</tr>
</thead>
<tbody>
<tr>
<td>C6</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0.1111</td>
<td>0.1429</td>
<td>0.0881</td>
</tr>
<tr>
<td>C7</td>
<td>0.5</td>
<td>1</td>
<td>2</td>
<td>0.1111</td>
<td>0.1667</td>
<td>0.0612</td>
</tr>
<tr>
<td>C8</td>
<td>0.3333</td>
<td>0.5</td>
<td>1</td>
<td>0.1429</td>
<td>0.25</td>
<td>0.0503</td>
</tr>
<tr>
<td>C9</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>0.5002</td>
</tr>
<tr>
<td>C10</td>
<td>7</td>
<td>6</td>
<td>4</td>
<td>0.5</td>
<td>1</td>
<td>0.3002</td>
</tr>
</tbody>
</table>

Table 5 The calculation process of judgment matrix from layer C to layer B3 (CR: 0.0575).

<table>
<thead>
<tr>
<th></th>
<th>C11</th>
<th>C12</th>
<th>C13</th>
<th>C14</th>
<th>C15</th>
<th>Wi</th>
</tr>
</thead>
<tbody>
<tr>
<td>C11</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>0.3590</td>
</tr>
</tbody>
</table>
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<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C12</td>
<td>0.5</td>
<td>1</td>
<td>0.3333</td>
</tr>
<tr>
<td>C13</td>
<td>0.5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>C14</td>
<td>0.5</td>
<td>0.3333</td>
<td>0.3333</td>
</tr>
<tr>
<td>C15</td>
<td>0.1429</td>
<td>0.3333</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Table 6 Urban historical landscape value evaluation system and its weight. Source: made by author.

<table>
<thead>
<tr>
<th>Target Layer</th>
<th>Criterion Layer</th>
<th>Factor Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Protection Status (B1)</td>
<td>0.1638</td>
</tr>
<tr>
<td></td>
<td>Noumenon Values (B2)</td>
<td>0.5390</td>
</tr>
<tr>
<td></td>
<td>Urban Integration (B3)</td>
<td>0.2973</td>
</tr>
</tbody>
</table>

Evaluation System of HUL Value (A1)

<table>
<thead>
<tr>
<th></th>
<th>Scale (C1)</th>
<th>Integrity (C2)</th>
<th>Authenticity (C3)</th>
<th>Boundary Definition (C4)</th>
<th>Functional Continuity (C5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.0069</td>
<td>0.0291</td>
<td>0.0776</td>
<td>0.0128</td>
<td>0.0374</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>The Value of Arts And Crafts (C6)</th>
<th>Protection Level of Cultural Relics (C7)</th>
<th>Selection Time (C8)</th>
<th>Age of Construction (C9)</th>
<th>Historical Significance and Function (C10)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.0475</td>
<td>0.0330</td>
<td>0.0271</td>
<td>0.2696</td>
<td>0.1618</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Ecological Integration (C11)</th>
<th>Dominance of Line Of Sight (C12)</th>
<th>Traffic Connectivity (C13)</th>
<th>Residential Correlation (C14)</th>
<th>Memory Relevance (C15)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1067</td>
<td>0.0540</td>
<td>0.0887</td>
<td>0.0322</td>
<td>0.0157</td>
</tr>
</tbody>
</table>

According to the analysis of the proportion of evaluation factors in the evaluation system of urban historical landscape value, B2 accounts for more than 50%, which is the main factor determining the value of HUL. Under this criterion layer, C9 and C10 are the most important factors in the whole evaluation system, accounting for more than 20% and nearly 20% respectively. This shows that paying attention to the time and historical value of heritage is the basis for understanding and expressing HUL. And it is of great significance for the city to sort out the characteristics and connotation of historical landscape from the perspective of time.

Compared with B2, B1 and B3 have relatively low impact on the value of the system. Under these two criterion layers, the most concerned factors are the Authenticity of historical relics and their Ecological Integration with the surrounding environment, which reflects the full understanding and recognition of the existing international heritage protection standards by Chinese experts in this survey.
In addition, the results of the current survey show that C1, C4 and C15 have little impact on HUL value. This reflects that the value of urban historical landscape is considered to be difficult to relate to modern activities. However, the key to the value of HUL is to endow historical relics with more abundant connotation through human activities. This also shows that the promotion and application of HUL in China is very necessary, which emphasizes that through space-time cognition, people can understand the development and continuation of urban context from the fragmented urban historical heritage.

### 4.2 Evaluation of HUL in Taiyuan City

#### 4.2.1 Overall analysis and evaluation

KDE map is formed with a bandwidth of 1km in GIS, and the overall value distribution map of Taiyuan HUL is obtained (Figure 4) which shows the characteristics of centralization in the east and dispersion in the west. And it shows that the overall value of the two old urban areas in the middle and east is the highest, which has become the value core of HUL. In addition, in the central and eastern regions, there is an obvious trend of connecting to become a north-south heritage corridor.

![Figure 4 Total value distribution map of Taiyuan urban historic landscape. Source: painted by author.](image)

#### 4.2.2 Item value analysis

Looking at the distribution of each sub index can further clarify the distribution law of Taiyuan city historical landscape value. As above, the nuclear density analysis with a bandwidth of 1km was performed for each evaluation item (Figure 5).

![Figure 5 Evaluation of historical landscape value of Taiyuan City. Source: painted by author.](image)

According to B1 analysis, the best protected HUL in Taiyuan are Ming Dynasty Taiyuan City and modern industrial heritage in the central and eastern area. Jinyang ancient city in the South and Qinglong ancient town in the north are also relatively well protected. On the one hand, Taiyuan City and modern industrial remains are relatively short from modern time, and they are relatively complete. On the other hand, many factory sites and historical buildings in these two areas were being used until now, so that they can be better repaired and maintained. However, due to the low economic level in other regions, people's concept
of historical and cultural heritage protection is weak, resulting in the overall protection status quo is not good.

According to B2 analysis, there are many valuable historical landscape sites in Taiyuan, including Neolithic and Paleolithic civilization sites in the upper reaches of Fen River, a large number of Buddhist cultural and historical relics at the turning point of Fen River eastward from the canyon to the plain, the historical relics of Taiyuan City and Jinyang ancient city, and the traditional village relics in the south. However, combined with the analysis of B1, the protection status of Taiyuan's historical and cultural landscape is generally poor, except for those in the central urban area.

According to B3, only Taiyuan City historical and cultural landscape area has a higher degree of integration with the city. This result reflects that the life of Taiyuan central city residents shows a tendency of inheritance and strong dependence on traditional habits. However, due to the relatively backward economy, relatively small population and weak concept of historical and cultural heritage or protection in the surrounding areas, the connection between historical relics and cities is weak. According to the current situation of protection, there is a high correlation between the protection status and the urban integration degree. This shows that only integrating history and culture into daily life is the most effective inheritance and protection of these cultural heritage.

4.2.3 Temporal and spatial evolution characteristics of HUL in Taiyuan

The evaluation process of the historical landscape value in Taiyuan is essentially the sorting and analysis of the historical landscape layers of the city. GIS is an effective tool for overlay analysis and visualization of historical and cultural heritage sites from two aspects of time and space.

(1) Spatial distribution characteristics

Taiyuan is located on the ground of Fen River Valley. Fen River and its tributaries are the skeleton of the city. It can be seen from Figure 6 that the main historical remains are distributed along the river. According to the overall value evaluation of the historical landscape of Taiyuan City, the historical and cultural heritage of Taiyuan can be divided into seven categories: ancient city, religion, military, village residential, early civilization, modern industry and revolutionary cultural relics. Through artificial identification, 357 heritage sites were classified and completed for the density analysis in GIS (Figure 7). It can be seen that distribution of historical cultural landscape types in Taiyuan city is closely related to the geographical morphology of rivers and mountains.

The Loess Plateau in the upper reaches of Fen River is the distribution area of the early cultural and historical remains of the stone age.

After the river enters the plain valley from west to east, the belt area perpendicular to the north of the valley is the Military heritage.

Fen River enters the central basin, which is the main urban area of Taiyuan city. From north to south, it forms several relatively dense remains concentration areas. From the north to the middle of the basin, there are the modern industrial heritage concentration area and Taiyuan City heritage gathering area from Ming and Qing Dynasties, the Republic of China to the post liberation period. In the southwest, the historical remains of Jinyang ancient city from the Tang Dynasty to the Ming and Qing Dynasties are the main gathering areas. The open plain area in the south is mainly the gathering area of traditional village relics such as residential courtyard of Qing Dynasty. In addition, the heritage sites on both sides of the mountain are distributed linearly, which is related to the construction of religious relics such as grottoes, mountain temples and Taoist temples.
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Figure 6 Density distribution map of Taiyuan heritage sites. Source: painted by author.

Figure 7 Taiyuan heritage site type distribution map. Source: painted by author.

(2) Temporal distribution characteristics

Combined with the completion dates of the heritage sites, it can further explain the characteristics of geographical space and types distribution of historical cultural landscape in Taiyuan. According to the coloring depth of POI in different historical periods, the historical relics in southwest are older than those in northeast, and the historical sites in central are closer to modern times (Figure 8). The change of Taiyuan's strategic position in different dynasties led to the change of Taiyuan's urban center location and construction focus (Figure 9). The distribution space of existing heritage sites has different characteristics of aggregation in different periods.

The chronological data and spatial information of HUL once again prove that Taiyuan is an important space-time intersection of the early culture of the Yellow River Basin, the Buddhist culture of the northern and southern dynasties, the military culture of the Tang and Song dynasties, the commercial culture of the Ming and Qing dynasties, and the revolutionary culture of modern times. The historical landscape space of Taiyuan city takes Jinyang ancient city and Taiyuan City as two core plates. Along the river flow regime and the terrain and mountains, there are three main historical and cultural corridors with military defense, religious sacrifice and Shanxi business economy.
5. Conclusions

This study first summarizes and sorts out the historical and cultural heritage information of Taiyuan, and establishes a digital database. Through AHP-GIS, visual spatial identification and quantitative value evaluation of Taiyuan city, historical relics are carried out. In terms of overall value, the historical landscape of Taiyuan city has formed a cultural context of military defense, religious sacrifice and Shanxi merchant culture due to its important military position, cultural transmission barrier and commercial transportation hub since ancient times. Relying on the natural geomorphic characteristics of the river valley, it forms a belt shaped historical landscape corridor integrating landscape and culture. Jinyang ancient city and Taiyuan City formed in the process of political, military and commercial exchanges are the core patches in the corridor, which can best reflect the prosperity of Taiyuan from Tang and Song dynasties, Ming and Qing dynasties to the Republic of China. They are also the two peak moments of urban construction. However, as a national historical and cultural city, the protection status and urban integration degree of Taiyuan City is obviously better than that of other regions. The protection status of Jinyang ancient city is better, but the integration degree with urban development is low, followed by Qinglong ancient city, and the protection status and integration degree of other historical landscape patch corridors are low.

Due to the large amount of data, and part of the information is not disclosed, the information of uncertified cultural security units and some county-level cultural security units are not included in the research scope. Even with the poor protection status and low protection level of these cultural protection units, there has been little impact on the whole research results, and the conclusion of this study can be consistent with
the development characteristics of Taiyuan city and the existing research results. So the impact of partial information loss can be ignored.

In the process of the city's high-quality transformation and development, HUL concept is taken as the research breakthrough point. Therefore, in the face of Taiyuan's distinctive topography and geomorphology, through the overall evaluation of Taiyuan's historical landscape and the analysis of its spatial and temporal evolution characteristics, this study suggests that the cultural landscape of Taiyuan city can be incorporated into the northeast southwest linear corridor. On the one hand, this linear protection path is the superposition of the time, function and type of historical and cultural relics in space, and can highlight the integration of urban historical culture and green ecology; more importantly, it can supplement and improve the special system of Taiyuan urban planning which is still imperfect in terms of historical and cultural protection.

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WU, C. 2014. Insist on culture and one belt, one road ahead. QIUSHI, 44-46.

