

Research Article

Study on Agricultural Park Landscape Planning Based on Visual Analysis

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Abstract: The whole agricultural park landscape planning refers to planning landscape of the agricultural park, so as to form the overall space protection and conscious guidance for the whole agricultural park. In this study, based on the perspective of visual analysis, taking visual analysis and interpretation of landscape as the breakthrough point, through discussing and analyzing the visual order of the overall landscape planning of the agricultural park, putting forward the overall landscape planning strategy based on the visual analysis of the agricultural park.

Keywords: Agricultural park, landscape planning, visual analysis

INTRODUCTION

In the past twenty years, with the development of economy in our country, the appearance of the agricultural park has taken on a new look, the quality of agricultural park landscape has been greatly improved (Struaise and Hauge, 1998). But compared with some developed countries, the quality of agricultural park landscape of our country has existed big gap with many problems, such as the local agricultural park landscape has been improved, but the overall landscape of the agricultural park has many destructive construction, forming new visual pollution (Daniel, 2008). Agricultural park landscape put too much attention to the surface, which led to a lot of historical and cultural heritages destroyed (Daniel *et al.*, 2009).

MATERIALS AND METHODS

The overview of visual analysis: Visual analysis is a kind of analysis ability based on human observation and habits of observation, the existing research can be including the analysis of view, dynamic view, visual interface, video rate and visual aesthetics, as well as some other contents. It is one of the commonly used methods for design, art and geography of landscape science, which also has applied in the design and construction of agricultural park. The current techniques of visual analysis is mature with the accumulation of data and a large number of experimental results, which is a powerful guarantee for guiding the landscape planning. The basic concepts involved in this study are as follows.

Viewpoint: Viewpoint is the observer's location for observing the landscape. According to the range of observation, observation area can be divided into relatively large panoramic view and smaller local view. According to the motion state of division place, it can be divided into relatively static view and dynamic view according to the observed material and its relative movement. In the agricultural park, the common static view can be including high-story buildings, structures, the commanding heights of mountain areas, or open space center areas (Mark and Sue, 1983). Dynamic view commonly can be including track rail, traffic system, landscape with water system, as well as dynamic vectors.

Angle: Angle refers to the position that the observer is standing and the observation can be observed from two aspects namely, horizontal direction and vertical direction. The way of observation can be divided into static perspective and dynamic perspective, from the visual experience; it can be divided into the comfortable angle and limit angle.

Sight distance: Sight distance is the distance between point of view and the observed object. The cognitive concept that needs to be focused including the maximum visibility, which refers to the maximum distance that the observer can reach. It is worth noting that the acquired maximum distance has great relationship with air humidity, as well as the quality of air. In addition, sight distance can be divided into three levels namely, scrutiny, close-up and overlook. Sight distance and angle is an important condition for the formation of the sight.

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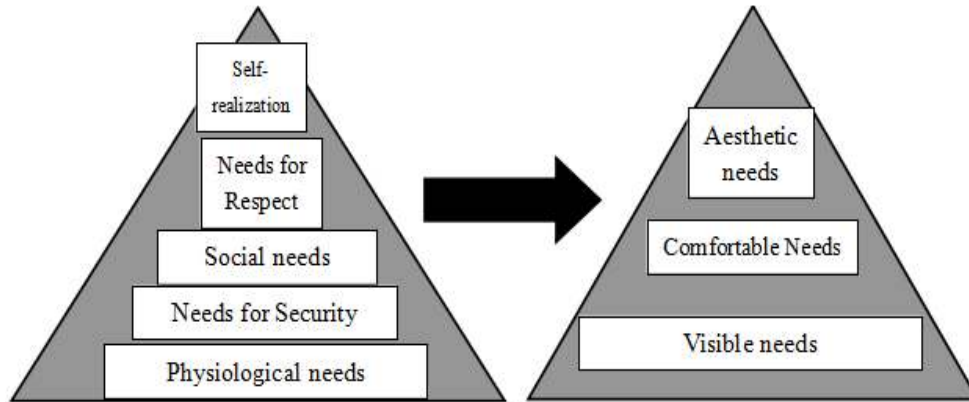


Fig. 1: Visual demand diagram based on Maslow's hierarchy of needs theory

Scene: Scene is the observed object. According to the shape, it can be divided into isolated point of scene, the regional linear coherent visual scene and scene with surface. According to the type, it can be divided into water scene, mountain scene, building visual scene and farmland scene and so on.

Viewing corridor: Viewing corridor at present is the highest degree of concern in the visual analysis, which is one of the most widely used concept in the relevant research and practice. But in the existed research and practice, the new understanding about it can be mainly divided into two types. One is the corridor that is formed in the movement; another is the visual space between viewpoint and visual scene. The above two kinds of definitions are involved in a lot of research and practice, which is very easy to cause misunderstanding and confusion. Therefore, in this study, the research on view point trajectory should be associated with the dynamic viewpoint research. The viewpoint and scene or the space between visual scenes can be defined as visible region, so as to distinguish the different research content.

Horizon: Horizon is the visual range based the observed range of viewpoint. The area of the horizon is decided by the sight distance, therefore, it can also specify a fixed distance in the field of study, such as the horizon of scrutiny, the horizon of close-up and the horizon of overlook, etc., (Maslow, 1943).

Visual interface: Visual interface is the planar dielectric layer during the process of observation, according to the degree of blocking the line of sight; it can be divided into open interface, shielding interface and sealing interface, etc., (Fig. 1).

The interpretation of agricultural park landscape: From the origin and development of the agricultural park, agricultural park is a regional, political, economic and cultural center, which is always in the process that

new superseded the old. If we take the agricultural park as a whole, the agricultural park landscape is a visual form of nature and the countryside that has the obvious difference with the rural physical environment.

Agricultural park landscape is the agricultural park space by the topography and land forms, plants, buildings (structures), green areas, as well as the composition of the various pieces such as the material in the form of performance that people can perceive through the senses and thoughts, therefore, the landscape is the agricultural park space that can bring people's psychological induction. Kevin Lynch once pointed out: "most people experience the agricultural park through the agricultural park streets, during the process of driving or walking in the streets." From the above, we can see public space of the agricultural park is the main space of experiencing the agricultural park, which also is the main factor to consist the agricultural park landscape. So the agricultural park landscape is the external manifestation of the form of the urban material space. Agricultural park landscape as a certain space has a range of visual quality, on some extent; it can directly reflect the construction level of the agricultural park (Fig. 2).

The analysis visual order of the whole agricultural park landscape planning: Visual order analysis put focus on the agricultural park space and the quality of experiencing the art through the extraction of visual perception, the degree of visual perception, the frequency of perception, as well as the range of forming the object and physical form with some other aspects information, so as to obtain the visual aesthetic way to see the landscape structure. Through the analysis of agricultural park space, the space of visual features and properties can be observed with "the sequence of visual" analysis. In practice, based on the analysis of agricultural park landscape, using a set of motion consciously with the view of some fixed point, so as to select the appropriate route that can be observed with the visual characteristics and properties of landscape agricultural park. By means of recording the scene,

Table 1: The relationship between agricultural park landscape planning content and function

Related content	To meet the needs	Play its function
The initial location for viewpoint and visual scene, the construction of visual space	Visible view	Integration and optimization
The adjustment of location, the maintain of visual space	Visual comfort	Integration and control
The refinement of viewpoint and visual scene, the optimization of visual space	Visual appearance	Optimization and control

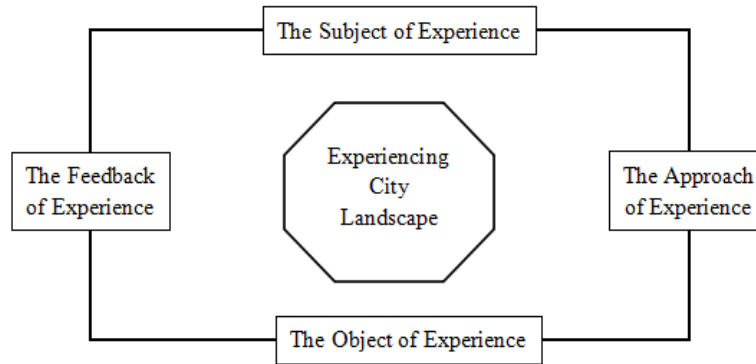


Fig. 2: The system of agricultural park agricultural park landscape

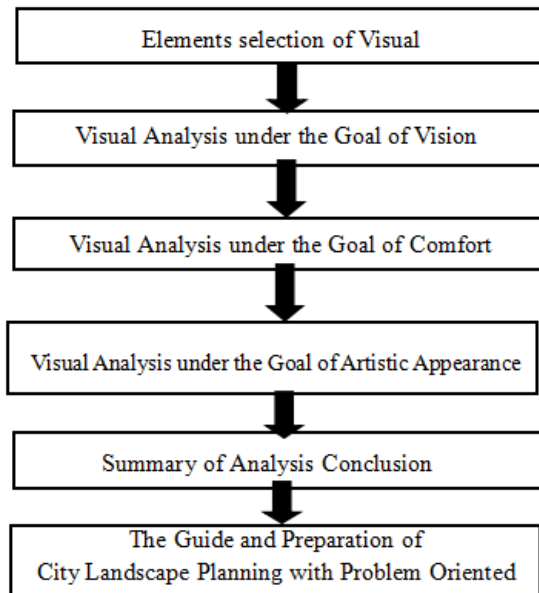


Fig. 3: The flow chart of visual analysis applied in agricultural park landscape planning

finding out the visual meanings of the axis of the agricultural park space, position, spatial correlation, making analysis for the elements such as: the control of the visual landscape, landscape visual corridor, landmarks, skyline, the focus of it is the space and form of the art. From the agricultural park attractions and scenic spots that are identified and classified, from the aspect of visual analysis, perspective analysis, video analysis, visual corridor analysis, vertical analysis as well as several other aspects, the specific application can be used with the visual order analysis method (Table 1).

Through discussing the classification of planning from three different points of view, this study will be

divided into macro part of landscape planning, meso part of landscape planning and microscopic part of landscape planning, so as to establish the planning system.

The macro programming: The part of landscape takes the visible part as the main goal, so as to play the role of integrating and optimizing the visual analysis, realizing the relationship between the overall view and the interactive macro view. As for the viewpoint and the visual location, the overall guidance should be established, so as to set up the integrity of the visual space composed by the viewpoint and the visual scene, so as to ensure the possibility of having excellent visual experience.

Meso part of landscape planning: At the meso level, the landscape planning will be based on the macro siting, so as to refine the accuracy of location, which can play a control role under the guidance of the visual analysis. Since it is based on the delineation of the visible area on the control index, determining the visibility region can achieve the goal of visual comfort.

Microscopic part of landscape planning: To enhance the quality of micro planning of landscape, it put focus on individual viewpoint and scene, with the control and the visual space, it can play a major role to realize the optimization and control of the visual aesthetic needs (Fig. 3).

RESULTS AND DISCUSSION

Protecting the agricultural park's overlooking landscape: Cities all over the world are through the strategic choice to protect and the agricultural park's representative overlooking landscape, in an effort to

maintain the characteristics of the agricultural park. The protection can be included the protection of the landmarks in and out of the agricultural park, as well as the protection of the overlooking landscape, by means of controlling the building's height between the viewing point and the overlooking object, the mountain contours can be consciously organized to the agricultural park's space, taking the mountains as the main scene, leaving the main system for high profile, so as to create multi-layer landscape environment.

The controlling partition of agricultural park's height: The structure agricultural park's height can have influence on the agricultural park landscape space's overall sense, skyline, ratio of space as well as the quality of space feeling. In the controlling partition of agricultural park's height, it should have reasonable layout for different height according to the different functions, different land use patterns, which should be combined with the terrain and other natural conditions of the area, the commanding heights, the important landscape, the outside line of mountains, as well as the overall implementation of the building height control, so as to provide specific support for optimizing the landscape space. At the same time, it can promote the formation of the regional characteristics of the space, in order to maintain gentle, rich and beautiful effect for the agricultural park's landscape. During controlling partition of agricultural park's height, it should ensure the main scenic spots between the viewing lines and the attractions that the sight cannot be blocked. Moreover, it also should ensure the historic district surrounding buildings that should not be too high. The protection of agricultural park's skyline should be complete with rich layers of shape contour.

Shaping the agricultural park's skyline landscape: Agricultural park's skyline is an important part of the agricultural park's overall landscape, which is a special form to have a visual perception for the agricultural park, since it not only can reflect the overall image of the agricultural park so as to improve the image as well as the concept, but also can highlight the personality and charm of the agricultural park and architecture. As far as architectural skyline is concerned, the architectural space is clear, bold, which can embody the beautiful landscape, by drawing the outline of the building's rhythm, it can reflect the agricultural park's cultural conception. Therefore, building beautiful buildings' skyline and space layout should consider building group: on one hand, the construction should be prohibited in certain area and the agricultural park landscape view corridor should be set aside, so as to avoid the destruction of the agricultural park image within the unique space; on the other hand, controlling and guiding the construction, controlling refers to the construction of the site, height, volume, volume rate, shape, color, etc. The space controlling and guidance can play positive role to the construction, which can

encourage it to have appropriate development in the proper land with the proper form.

Waterfront skyline: Waterfront skyline can be divide into two parts, namely, the foreground skyline and background skyline, which is composed of the outlook skyline with the water construction and formed along the depth direction in the construction background of the skyline. The prospect of skyline is mainly in a horizontal composition, which put emphasis on the appropriate scale and intimacy, paying attention to the mutual coordination and riparian vegetation as well as water features, so as to avoid taking too large building activities that can have effect on coastal people; background skyline is mainly in the vertical composition. As for size and scale, in general it should highlight its tall, magnificent momentum. From the outline, the background is the main component of the waterfront skyline of the agricultural park's skyline, which is in a dominant position; and the prospect of the skyline in a subordinate position, its main function is to provide the bounding box, w foil and foil background skyline. By means of the horizontal and vertical comparison, the agricultural park's skyline can change vividly with wealthy levels.

The landscape of mountain contour: The contour is an important factor of agricultural park's landscape, undulating peaks can constitute the agricultural park's beautiful natural screen. In the agricultural park's overall landscape planning, it should protect the mountain as the background, strictly control the excavation, the damage; rich mountain vegetation should be planted, so as to form multi-level landscape system; avoiding tall structures occlusion and destruction, coordinating the relationship between the buildings and the contour lines, well decorating the high mountain landscape with architecture as well as the memory construction, so as to create a beautiful skyline.

CONCLUSION

In this study, it takes the basic theory evaluation for vision and analysis method as well as the basis, explaining the visual analysis mode and the value orientation for the agricultural park's landscape. Visual experience can feel the agricultural park's landscape, space distance, volume, space and direction features, since the form of agricultural park's landscape space is mainly experienced by visual sight, which can have a reaction from the people's psychology.

The quality of agricultural park's landscape is determined by the visual effects in a great extent, therefore, the relationship between the connotation of the visual sight, landscape and space is the center part of the landscape design methodology. As for the analysis of the agricultural park's landscape, from the individual point of view, it is subjective, since the different analysis and evaluation may be great for the

same landscape because of the different individuals. Therefore, the analysis and evaluation of the landscape are both individual evaluation, which are difficult to grasp in spite of the common public evaluation. Finding a scientific evaluation method for the agricultural park's landscape with the common evaluation side is one of the important research content for agricultural park's landscape.

REFERENCES

- Daniel, S., 2008. Understanding the conceptual landscape of visual metaphors. *Teach. Artist J.*, 71: 24-31.
- Daniel, J., B. Thierry, C. Jean, H. Mohamed, T. Francois-Pierre, T. Celine and W. Pierre, 2009. A quantitative approach to the visual evaluation of landscape. *Ann. Assoc. Am. Geogr.*, 72: 156-181.
- Mark, G.R. and J.K. Sue, 1983. An elementary linkage analysis of variables in the communication of landscape simulations: Implications for visual resource management. *Landscape Res.*, 71: 78-90.
- Maslow, H., 1943. A theory of human motivation psychological review. *Psychol. Rev.*, 50: 370-396.
- Struaise, E. and L. Hauge, 1998. Landscape protection evaluations and visual preferences for Western Norwegian Agrarian landscapes. *Norsk Geogr. Tidsskr.*, 56: 39-47.