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Discussion on application strategy of computer aided design system in the urban garden planning

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ABSTRACT

Scientific construction of computer-aided design system has a positive impact on the effective implementation of urban garden planning. It makes the formation of design faster and more convenient. In research and discussion process of this paper, the specific discussion was binding with the complex computer-aided design strategy. A proposal idea of strategy had been fully explored in order to make the basic constituent elements more clearly. There are main constituent elements in complex computer-aided design strategy. They are the date entry of regional basic geographic information, data analysis of local climatic conditions and architectural parametric design strategies. In these three aspects, the scientific of complex computer-aided design strategy could be explained systematically. In conjunction with this discussion process, a further exploration had been done for solving method of design techniques. A full exploration had been done in order to build the technical supports for logical construction and conceptual design. From these explorations, the key technique for computer-aided design system could be built. Lastly, Finally, there is an effective research on the application of the actual construction process. This research would make the intelligent features of computer-aided design system fully reflect. It provides a more powerful theoretical support for the urban garden planning and during the implementation process. All above are the main ideas in the study process of this paper. The main content are shown at the same time. This provides a strong basis for its tightness in study process.

KEYWORDS

Computer-aided; Design system; Urban garden; Planning application.



INTRODUCTION

Intelligentization has become the future direction of development in design field. For this direction of development, computer-aided system plays a very important role. There is a high requirement for design plan during the process of urban garden planning and design. So construction of computer-aided design system becomes the important path in order to push urban garden planning to scientific development. In this paper, the process of system design and specific application would be presented in three aspects as complex computer-aided design strategy, design technology solutions and the construction from virtual to actual.

COMPLEX COMPUTER-AIDED SYSTEM STRATEGY

During the process of building computer-aided design system, its main exposition procedure focuses on the corresponding design of establishing a parameters model, thus making the system construction parameter equation can become an important part of spatial analysis. During the analog control of ecological environment and optimization, there are three different angles for making its specific design. These three angles are not done in turns but by making use of each other's analysis result. So a big internal relation could be formed in the equation analysis process^[1]. As an example, in the computer-aided process of Geographic Information System, the analysis results can be used as output condition of a parameter model construction, making the simulation conditions more complete and accurate during the system design process. For example, during the network, distance and sight analysis process, this design plan can be effectively used, so that the analysis content can be more comprehensive, thus providing a broader parameters platform for specific content analysis.

Proposal of complex computer-aided system strategy

In processing of computer-aided design, the overall plan can be divided into three parts to be fully presented. Among these three parts, there is a jump that would be formed between each other at different stage. The concerning contents are mainly about all the details from site analysis to specific plan formation. The range is very wide. In the entire construction of computer-aided design system, the application always has some uncertainties. For example, in the design process of an urban garden without water, the design should take the architectural style of surrounding buildings and the elements of selected site into consideration. In this process, the degree of illumination, wind statistics and many other factors must be explored and sorted effectively. The specific result will be made and improved. In this process, the parameter model is the main body of analysis, in which the illumination, wind statistics and etc. should be analysed scientifically.

Data entry of regional basic geographic information

During the process of building regional geographic information system, the correct choice of the appropriate cut method of data information must be considered at first. During the system design process, its geographic information data entry process is the prerequisite elements for the planning design. It can provide more scientific basis data for the entire planning design and provide effective help to analyse data (detail as shown in Figure 1). When loading the data, the specific position of sensitive zone must be marked effectively. The existing roads, dams and elevations must be further confirmed. With the purpose of using the computer-aided design, the wetland environment should be controlled effectively. Here the control lies mainly in the effective control and management of the water depth, which makes the height of aquatic plants be planned more scientifically and effectively. And ultimately it can provide a more robust basis for expanding the surface area^[2]. Among this, the slow beach design should set the extending the land towards the water surface as a primary means, so that the transition of land to water can be more natural and the change of water depth can be seen more apparently. Here, it is not recommended to plant the same species of aquatic plants. The difference between the plants should be shown. In the data entry process, the basic geographic information needed for visitors as the boardwalk, relaxing platform and etc. should be entered effectively. The writers effectively establish this basic geographic information with electronic positioning systems. And they coordinate the scientific tagging, making the establishment of drawings show the full and comprehensive geographic information. And in this way, favourable conditions for the overall planning of urban gardens could be provided.

Data analysis of local climatic conditions

During the process of building computer-aided design system, the other aspect is the effective and scientific construction for weather conditions data analysis system. Besides the analysis for clear meteorological conditions of the planning area, the major impact condition that influences architectural design must be determined^[3]. For example, during the calculation of the radiation intensity of light, the orientations of buildings, as well as natural ventilations, these basic meteorological conditions should be analysed by science computer. In this way, the summary of thermal environment strategy during architectural design process could be fully supported. So for the overall planning and design of urban garden, it can provide a more powerful database. The best orientation analysis is shown as Figure 2.

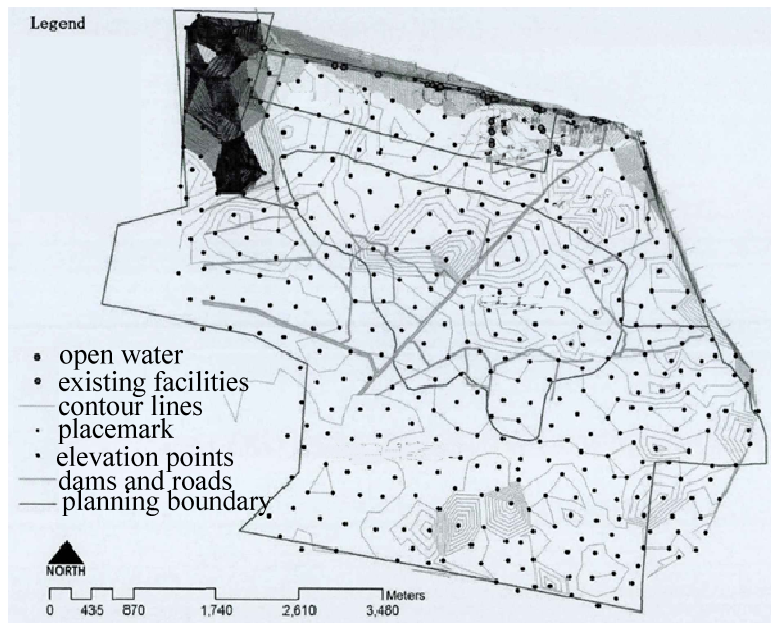


Figure 1 : Superposition of GPS position data and elevation point data

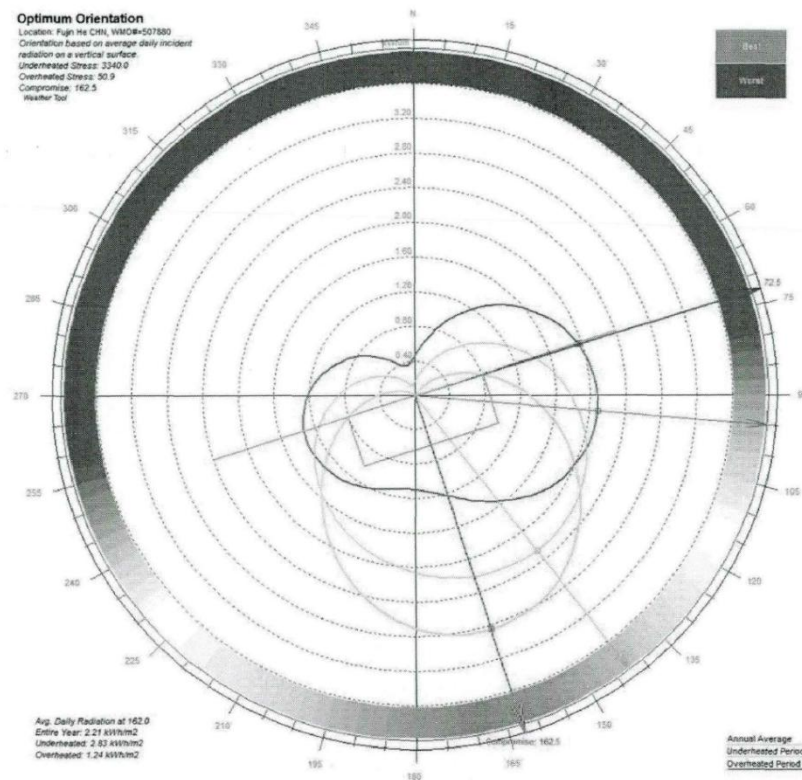


Figure 2 : Best orientation analysis

Architectural parametric design strategies

In computer-aided system construction process, parameterized design can be extended widely to regional effective design. However, during the study in this paper, the construction process of computer-aided design system mainly presented the technique of specific analysis for basic geographic information. By means of more effective and systematic management of more fundamental geographic information, aided design makes the ecological effects of urban garden design optimized. However, in this field, the parameterized design can be used more effectively (detail shown in Figure 3). By analysing the specific ecological factors, how the proper orientation of the building and the discretion could affect the internal energy could be obtained. So the urban garden design and planning can be more explicit.

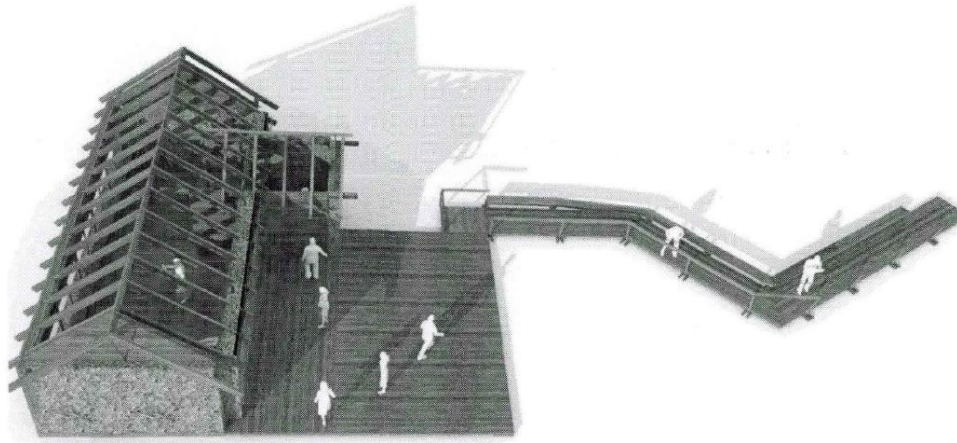


Figure 3 : Architectural design

SOLVING METHODS OF DESIGN TECHNIQUES

Technical support for conceptual design and virtual build

In the urban garden planning process, the effective use of modern technology has become an indispensable and necessary factor. However, modern technology cannot be replaced by idea formation of the plan. Simply, it plays the role of guiding the thought generation of design and planning^[4]. However, with the idea of the design and planning, logical thinking can be effective integration, in this way to make application of modern technology have even more logical thinking. Such view is precisely the mutual agreement with the idea of a book that foreign scholars wrote. Virtual build technology, thus, is more widely used in the urban garden planning process. For example, during one of the basic elements-the long chairs-design process, the study of the design's necessity and functionality is the fundamental premise. At the beginning of design, a reasonable size rectangular can be set as chairs, in among every piece of scenery stair and stone can be considered to have this specific feature. This specific function is possible to have some positive effect on people. From an ergonomic point of view, it can also be used as its primary function if it has a more positive effect on visitors. The detail is shown in Figure 4. In the Figure 4, it concerns the concrete design ideas presented in construction of logical thinking process. The key is that the change of each node is able to reflect its function to the maximum extent. Then, the nine nodes can be chosen randomly. Its form can obtain a corresponding change, in which the result of logical thinking in the design process also changes^[5]. Logical thinking of design is not only reflected in the mathematical design process. Computer can simulate everything, which could not be presented directly in front of people, effectively. With the correspond language; the logical relation between urban garden planning and maths could be shown fully. A closed link between data construction and design process can be formed.

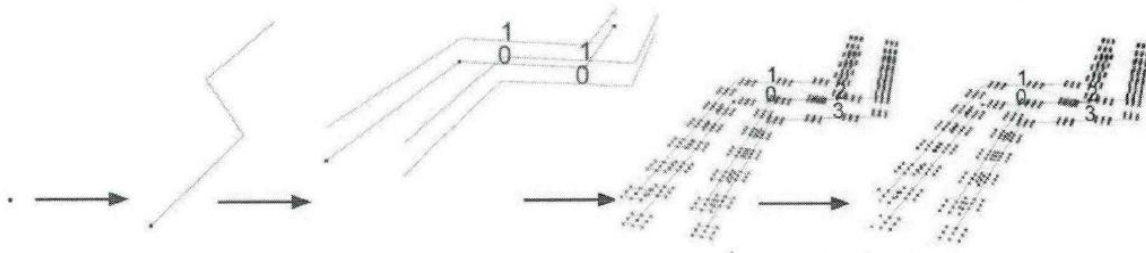


Figure 4 : Geometric construction logic

In the existing design process of urban garden planning, this design always has unilateral thoughts. This kind of unilateral thoughts lead the design to unreasonable, even mistakes. The unilateral thoughts are the results of that the designers only analyse their thoughts in mind. However, it is proved that design process is achieved by deriving. The idea of the design is only the important source. Majority of the designers carry out their design with a direct means, which take the actual things as the references to make their main design idea undergo step by step. So it makes the design process lose innovative logical thinking. Planning and design are not able to meet the specific needs of real planning. For urban garden planning design, how can form the closed relation between their logical thinking and design and how can maximize the useful and ecological protection function are problems that every designer has to face^[6]. Here, art and design level of design idea have become key factors. By the above discussion, it can be shown intuitively the important role of the broad concepts in urban garden

planning. It can be used as a guide method. It has no contradiction with logical thinking contradictions. It would make the design process to achieve a more in-depth goal.

Data: fundament of logical construction

In the construction process of computer-aided system, sound scientific data processing function is a presence of the inherent requirement of the system intelligence. This is an effective and important form to distinguish virtual model of the traditional construction and intelligent system. During the construction process of computer-aided system, the three-dimensional model construction has a broad application. It makes the general concepts in minds can be implemented by computer-aided visual system. This method can adjust the assisted scrutiny process in a time as short as possible. So the design can be effectively expressed in the virtual form. In this process, the design concept for the scrutiny process can produce an extremely positive role in promoting, and then makes each factor of three-dimensional space more artistic, while generating a positive impact on the viability. In this basis, logical thinking relationships is considered, as an important factor in the planning and design. In this process, there must have some differences of certain extent between scrutiny process and logical thinking construction process and their differences can be shown with two forms as data logical relation and data processing.

VIRTUAL BUILD TO ACTUAL CONSTRUCTION

Controllable factors of logical construction

The so-called parameterization means that the organism is able to do the independent regulation. The influencing factors are controlled effectively through its logical construction process. In the study process of this paper, a series of parameters, such as the length of real object (long tables) and corresponding three-dimensional graphic calculation conditions, have been controlled effectively. There are many factor included, mainly as turning angle corresponding parameters and so on (detail shown in Figure 5). For the whole regulation process, the information should remain its feedback and regulation simultaneously. The morphological change can be fully reflected at the first time in this way, for example, the variations of lengths, changes of turning angles and so on. This form of scrutiny process has a positive impact. At the same time, it can set as a reference of the original object. The intelligent features of system can be further reflected. In the construction process of computer-aided system, its logically constructed organism has become the main way of urban garden design. It makes the changes in logical control process more intuitive through scrutiny. So the scrutiny process can be achieved with the features of simple aspect. It is allowed the idea of program development to become broader^[7]. The focus of the program development process piled on the design methodology. For the design and development process must be considered as a whole, and cannot be regarded separately. The main reason is that the parameter control can produce more intuitive positive or negative impacts on situation changes.

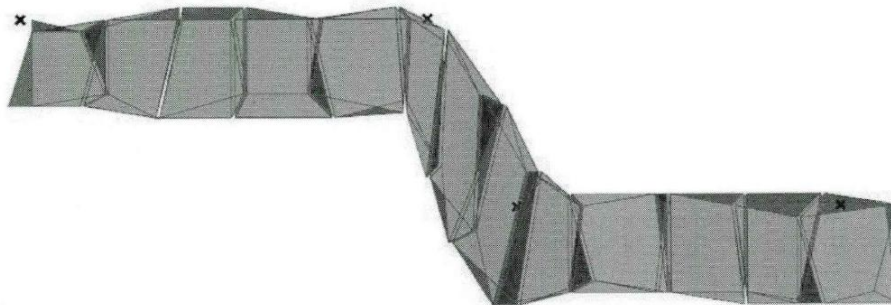


Figure 5 : Gap existing between the unit body

Construction under data control

3D CNC technology is the ideal means mainly for the effective construction of different body. Its complex shape can be constructed most intuitively and effectively. However, on the basis of the intelligent design scheme, it can be achieved with the conventional design method. The design process is complex. So it is not able to be skilled used by majority of designers. Here, the mentioned complex is mainly in terms of the construction process. During the process of intelligent design, the mechanization of construction process should be carried out in intelligent process; so that it can meet the overall needs of the future urban garden planning and design. It can provide a powerful fundament for forming a well match between intelligent design and construction techniques. But if the former exceeds significantly more over the latter, the process of intelligent design will become very complicated. In principle of planning and design process of many second-tier cities in China, in order to realize a creative design, the construction technology must be handled. The design of flatten figure is shown as Figure 6.

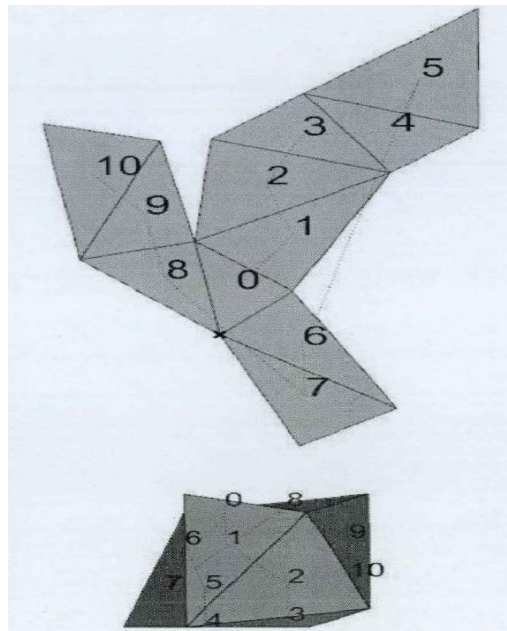


Figure 6 : Flatten figure

CONCLUSION

All above are correspond study and discussion about the application strategy of computer-aided system in urban garden planning. In this paper, the complex computer-aided design strategy and solving method of design techniques are the key points of discussion content. It provides an effective foundation for the specific implementation and the effective implementation of the application process. So the study process in this paper has a strong scientificity and application value.

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