

# *The Application of AR Narration in the Learning and Propaganda of Endangered Plants in Changbai Mountain*

Zhuo Liu, Zhanying Chen

*Jilin Animation Institute, Changchun, 130012, China*

**Keywords:** AR Narrative; Changbai Mountain; Endangered Plants; Learning and Publicity

**Abstract:** Changbai is located in the southeast of Jilin Province, and it is a very important plant species resource pool in the whole Eurasian continent. During the long-term development of natural history, the original forest of Changbai Mountain has preserved a large number of ancient plant relics with its unique natural geographical environment. How to effectively protect these precious plants has become an important topic that every relevant practitioner must think about. This paper will discuss this topic, and combine the learning and publicity of endangered plants in Changbai Mountain with the current prevailing AR narrative mode. Through this new technical mode, which is more intuitive and vivid, we can effectively promote the endangered plants in Changbai Mountain area, so that we can contribute to the local plant protection.

## 1. Introduction

AR narrative technology is also known as augmented reality technology, that is, by building a virtual space with high similarity to the real world in the computer, to achieve the display of something or the narrative of a story. This narrative display method can even interact with the operator to a certain extent through proper operation, so that users can obtain a more real and profound experience. It is very suitable for the study and promotion of things that are difficult to contact directly. For the study and publicity of endangered plants in Changbai Mountain area, one of the main problems has always been that it is difficult for students or publicity audiences to have direct access to real plant samples, which can only be done through very indirect ways such as pictures or text descriptions, and has greatly limited the efficiency of study and publicity. However, in recent years, AR technology has developed rapidly. However, it provides a new way to solve the problem and opens a new form of publicity and learning of endangered plants in Changbai Mountain.

## 2. Introduction to AR narrative mode

AR narrative mode is a new narrative mode that has emerged with the continuous development of computer 3D simulation technology in recent years. It mainly displays the objects in the real world in the virtual digital scene by computing the position and angle of the camera in real time, and users can also interact with the virtual scene through specific operations to obtain more profound perception. The current AR narrative system has three significant features: First, three-dimensional registration, which is to simulate and build an object in the real world in the virtual digital space, and achieve

tracking and registration of the object, so that it can change with the user's operation and perspective changes. [1] This step is the first step of AR narrative and the basis for building the entire AR narrative model. The second is the integration of the virtual and the real, that is, a media that can be connected with the virtual world is set up in the real world. In the framework of Changbai Mountain endangered plant learning and publicity, the media can be a two-dimensional code or a picture of a specific plant. Users can scan the media to enter the preset virtual AR space to achieve the integration with these virtual objects. The last is the real-time interaction link, that is, users can interact with some objects in this virtual space through specific operations. The learning and publicity effect produced by this is far beyond the simple words or pictures.

### **3. The basic model of AR narrative and the combination of publicity and learning of endangered plants in Changbai Mountain**

In recent years, with the continuous maturity of AR technology, the AR narrative mode has also begun to become more diversified. There are not only the most basic 3D virtual space narrative mode, but also many diversified narrative modes such as AR voice narrative, AR game narrative and so on, providing more alternative space for the study and promotion of endangered plants in Changbai Mountain.[2] The author will, based on his own practical experience and the analysis of the current development status of AR technology, explore the integration of AR technology with the publicity and learning of endangered plants in Changbai Mountain.

#### **3.1. Combination of AR voice narrative and paper narrative**

AR voice narrative is a very classic AR narrative mode, which has been used in many tourist attractions or museums. Its basic principle is to provide a more colorful learning experience for the audience through the combination of narration, background music and picture content, and effectively overcome the problem of poor interest of readers due to boring knowledge in the process of knowledge learning. It has greatly improved the efficiency of learning and publicity of relevant knowledge. The application of this AR narrative mode in the study and publicity of endangered plants in Changbai Mountain can be mainly carried out from the following two aspects: First, for some related books and text publicity materials, developers can digitize the contents of these books, use the voice elements as narration and background music of voice narration, and use them with models or animations. Users can not only understand relevant content through voice all the time, but also interact with virtual characters through voice[3]. For example, a special virtual cartoon character can be specially designed for text materials about the needle and broad mixed forest in Changbai Mountain to conduct voice interaction with readers. It can not only describe the overall written materials, such as the development history and current situation of Changbai Mountain coniferous mixed forest to users through narration and background music, so as to render users' sense of substitution. At the same time, users can also interact with them, and divide the information about the mixed coniferous forest in Changbai Mountain into several categories, such as the causes of the mixed coniferous forest in Changbai Mountain, the development in history, and the current types of animals and plants. Users can freely choose what they want to know according to their interests. Secondly, in some museums or Changbai Mountain Cultural Propaganda Hall, you can set a special two-dimensional code at the door or on the propaganda page. After scanning, users can enter an AR voice narrative program, which can obtain the user's location at any time, and carry out the corresponding AR voice narrative service according to the user's movement in the museum. For example, in a museum, when the user comes to the Changbai Mountain Endangered Herbal Plant Area, the program can carry out relevant voice broadcast. With narration, the background music tells the user about the development history and protection status of Changbai Mountain Herbal Plants, greatly improving the user's immersion

experience, and achieving significant improvement in learning and publicity efficiency.

### **3.2. 3D model structure narrative in AR narrative**

3D model is the most significant feature of current AR narrative, and it is also the most critical element to distinguish AR narrative from other performance modes. The 3D model is a blessing, so that a very realistic AR space can be built in a virtual digital space, and the model data of all endangered plants in Changbai Mountain can be uploaded, so that they can be vividly displayed. If the design is exquisite enough, it can even show the general distribution of the entire Changbai Mountain forest area. The learning and publicity effect that can be achieved is ordinary text, Pictures and videos are not comparable. The current 3D model technology can already realize the perfect reproduction of complex things, and can build a digital virtual space through space modeling, and arrange this space into an online learning and publicity platform through appropriate design, so that users can learn and understand the endangered plants in Changbai Mountain by virtue of this digital media. According to my own practical experience and the current level of AR technology development, the author mainly designs related links from the following aspects.

#### **3.2.1. Build panoramic map and plant distribution model**

Changbai Mountain is a mountain range with a wide range of altitude and coverage. Its terrain is very complex and varied, and the geomorphic combination is quite different. It mainly includes mountains, plateaus, valleys, platforms, valleys, swamps and other areas. A large number of endangered plants are not only distributed at different altitudes, but also distributed in these complex and diverse landforms. As a result, it will be very difficult to learn about the endangered plant types in Changbai Mountain through field investigation. However, the continuous improvement of 3D model technology provides a very effective solution to this problem. The current virtual reality technology, such as the latest virtual engine 5, can already build a very realistic natural scene in the computer through not too complex operations, and even simulate some changes in natural weather by adding natural physical systems, such as rain, It is snowy, which provides great convenience for the construction of AR narrative system of endangered plants in Changbai Mountain. First of all, the distribution of endangered plants in Changbai Mountain can be divided into several large regions, for example, they can be divided into coniferous and broad-leaved mixed forests, coniferous forests, birch forests or alpine tundra according to different plant communities. Then, the highly representative regions in these regions can be constructed by 3D digitization according to the field survey or 3D scanning of Changbai Mountain area. As a framework for publicizing endangered plants and learning AR narratives, then through 3D modeling technology, the highly representative models of endangered plants in these regions are constructed, arranged and combined according to their distribution in the nature, so as to build a digital Changbai Mountain forest digital space. After that, these large spaces can be uploaded to a special APP. Users can choose different forest areas for digital visit according to their own needs to intuitively experience the growth and distribution of Changbai Mountain forest areas and various endangered plants in the real world, leaving a deep impression on users.

#### **3.2.2. Build 3D interactive animation to enhance user participation**

If you want to impress learners and users on the conservation of endangered plants in Changbai Mountain, the most important thing is to let them have a "sense of participation", that is, they are not just simple learners or visitors, but can actually participate in the conservation of these endangered plants, which greatly improves their enthusiasm for participating in the conservation of endangered plants in Changbai Mountain. This is also very important for the overall plant protection of Changbai

Mountain. At this time, we can introduce some thinking modes of the game industry to give 3D space models more functions, not just display functions. For example, users can obtain corresponding "learning points" by answering relevant questions and making breakthroughs in knowledge, and then these points can be directly linked to the Changbai Mountain Endangered Plant Protection Project. Users can "claim" part of the endangered plant area through points. The more points you have, the more resources you can protect in this area. The user's name can also be recorded in the honor list of the person who protects this part of the plant. Through this operation, users can be connected with the cause of endangered plants protection in Changbai Mountain. Their own learning is not only to enrich their knowledge reserves, but also to directly participate in the cause of protecting these endangered plants. It also enables users to participate in the cause of learning and protecting these endangered plants with a more positive attitude. We will fundamentally strengthen the protection of endangered plants in Changbai Mountain.

#### **4. Main problems that should be paid attention to in the process of AR narrative design**

As a new narrative method, AR narrative has reached a high level of technology, but the attempt to use this technology for learning and publicity activities is still at a relatively early stage. There are still significant problems in many aspects. If it is not handled well, it will lead to failure to achieve ideal results in the specific practice process. Based on my own practical experience. The following aspects need attention, which should be carefully considered in the process of specific AR narrative practice.

##### **4.1. Deal with the relationship between AR narrative and text information**

The content of AR narrative needs some text information as an aid. Text is the main way for users to obtain relevant knowledge. 3D models and animations are just auxiliary information transmission methods. The ultimate goal is to enable users to absorb relevant knowledge in a more efficient way. Therefore, in the design process of AR narrative mode, it is necessary to ensure a high degree of integration of text information and AR scenes, so as to prevent users from forgetting what they should have learned because they are immersed in the fun of AR interaction. Otherwise the AR narrative rhythm and related text messages cannot be effectively matched, resulting in confusion of users receiving information. This requires designers to combine the different characteristics between AR narrative and literal narrative, always maintain the dominant position of literal information, and make the content of AR narrative an effective enrichment and supplement of literal information, so as to achieve efficient learning of relevant knowledge.

##### **4.2. Guarantee the convenience and convenience of AR narrative program**

As a kind of scientific and technological narrative means with high technical content, AR narrative is still intended to better publicize relevant plant knowledge to users in the aspect of Changbai Mountain endangered plant protection, rather than just one-sided pursuit of shock in visual effect and exquisite technical level. The most important thing is to design according to the specific needs of users, and coordinate the relationship between users and AR narrative. Design indirect interactive pages and programs that are easy to operate corresponding to the content to ensure the continuity and smooth logic of AR narrative structure. For example, if the user group of the AR narrative is young children, then some more cartoon oriented operation interfaces and plant models can be designed at this time to enable them to learn and operate through small games and other popular ways for children. If necessary, warm prompts and corresponding instructions should also be provided.

## 5. Conclusion

As a brand new narrative way, AR narrative provides learners with a privileged learning way with its unique virtual reality technology. In the protection of the endangered plants in Changbai Mountain, the information of the endangered plants in Changbai Mountain can be transmitted in a more interesting and efficient way through the use of this technology, so that more people can participate in this protection, and provide a strong development impetus for the protection of the endangered plants in Changbai Mountain.

## Acknowledgement

Fund Project: Social Science Research Project of The Education Department of Jilin Province, project No: JJKH20231342SK; Results of Phased Research of Key Social Science Research Project of Jilin Animation Institute, project No: KY22SZ09.

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