A Study on the Picture-Book Translation of Complex Village Spaces: The Case of Eya Village

Shuge Nie[1], Sihao Zhou[1]*

[1]School of Design, Dalian Minzu University,

Dalian, 116600, China.

*Corresponding author. E-mail: zhou_s@me.com;
Contributing author: 2552929421@qq.com.

Abstract

Picture books on traditional villages play an important role in children's cultural communication. However, when the subject involves villages with complex spatial relations, picture-book creation often struggles to balance authenticity, readability, and visual organization because of the lack of stable spatial references. Taking Eya Village as a case study, this article explores methods for translating complex village spaces into picture-book images. Characterized by a honeycomb-like settlement pattern and vertically layered dwellings, Eya Village presents considerable challenges for spatial representation and therefore offers significant research value. To address this issue, the study selects three adjoining houses as core samples and establishes an analyzable, verifiable, and reusable spatial system through the combined use of field surveying, floor-plan drawing, three-dimensional modeling, and hand-drawn visual translation. This spatial system is then introduced into the process of image translation. The study summarizes this method as a technical pathway consisting of field surveying, hand-drawn floor plans, digital floor plans, three-dimensional modeling, spatial sectioning, hand-drawn translation, and final illustration rendering.

Keywords: Traditional Village Picture Books, Spatial Translation, Eya Village, 3D Modeling, field surveying

1 Introduction

Traditional villages preserve vernacular architectural forms while also embodying everyday life and local memory, making them important subjects of cultural heritage conservation and dissemination [1]. In recent years, increasing attention has been paid to the protection of traditional villages; however, cultural products for children remain relatively insufficient [2]. Owing to their intuitive, vivid, and accessible nature, picture books possess considerable potential for cultural communication [3]. Nevertheless, the number of existing picture books on traditional villages remains limited, and many of them still focus primarily on landscape display, folk custom introduction, or the presentation of isolated pieces of knowledge. As a result, they often fail to adequately address the relationship between village space and human activity, making it difficult to transform traditional villages into visual narratives suitable for children's sustained and in-depth reading [4–6]. This problem becomes particularly evident in villages with complex spatial relations. If creation relies only on general field observations, photographs, or fragmented sketches, it often captures no more than partial impressions and cannot support the overall construction of spatial expression and visual organization in picture books. Against this background, this article takes Eya Village as a case study to explore methods for translating complex village spaces into picture-book images.

2 Case Significance

Eya Village is located deep in the Hengduan Mountains, and its distinctive yet relatively enclosed geographical setting has profoundly shaped the spatial form of the settlement. The entire village is built on a steep slope, surrounded by mountains and characterized by difficult access. It is precisely under these relatively isolated natural conditions that a honeycomb-like architectural cluster gradually emerged, with houses closely connected to one another and adapted to the mountainous terrain. The dwellings interlock with each other, adjacent buildings share or rely on common walls, and roofs, courtyards, and alleys overlap and interweave, forming a highly connected and vertically layered spatial whole, as if the village had grown organically out of the mountainside (Fig.1).

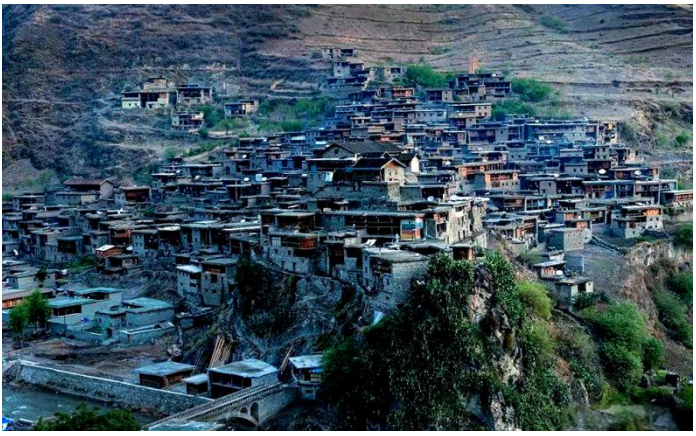


Fig. 1 Panoramic View of Eya Village

Within the buildings, the dwellings of Eya Village display a clear vertical functional division. Houses are typically organized into three levels: the ground floor is mainly used for keeping livestock, the second floor contains the hearth and main hall and serves as the core space for receiving guests, dining, heating, and family gatherings, while the third floor is used as the sleeping area to ensure relative privacy and dryness. It is precisely this spatial arrangement of livestock below, communal living in the middle, and sleeping above that gives the honeycomb-like settlement of Eya Village its distinctive characteristics of high connectivity, strong enclosure, and multiple spatial layers (Fig.2). For picture-book creation, such complex spatial relations pose considerable challenges but also give the case greater research value. If handled inadequately, the work may easily slip into a mode of scenic description; if translated accurately, however, this distinctive architectural space can provide an important basis for exploring methods of visual expression in picture books on traditional villages.

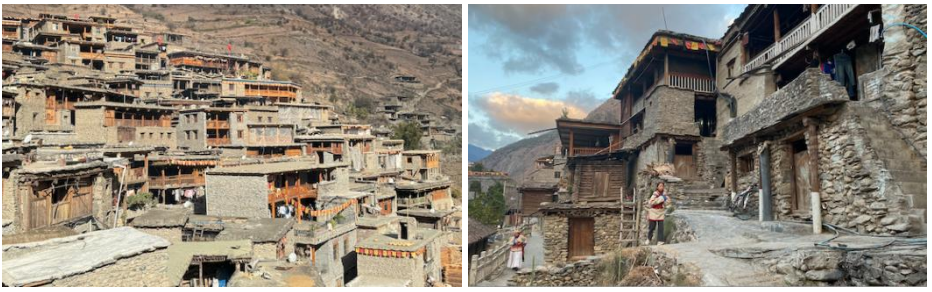


Fig. 2 Architectural Details of Eya Village

3 Picture-Book Creation Practice

To address this problem, the study focused on the systematic surveying and spatial modeling of representative dwellings. Three adjoining houses were selected as core samples for floor-plan drawing and spatial data collection. After entering each sample house, the research team first observed the overall building layout to establish a preliminary understanding of the spatial relations (Fig.3). The investigation was then carried out through a division of labor: the measuring team recorded key dimensions, including room length, width, and height, as well as the sizes and positions of doors, windows, beams, and columns; the drawing team simultaneously produced on-site sketches to translate building outlines, spatial partitions, and the locations of fixed facilities into graphic information; and the photography team conducted targeted image recording of key areas and problematic nodes identified during surveying and sketching, thereby providing visual evidence for subsequent spatial reconstruction and design judgment (Fig.4).

Fig. 3 Photographs of the Field Survey

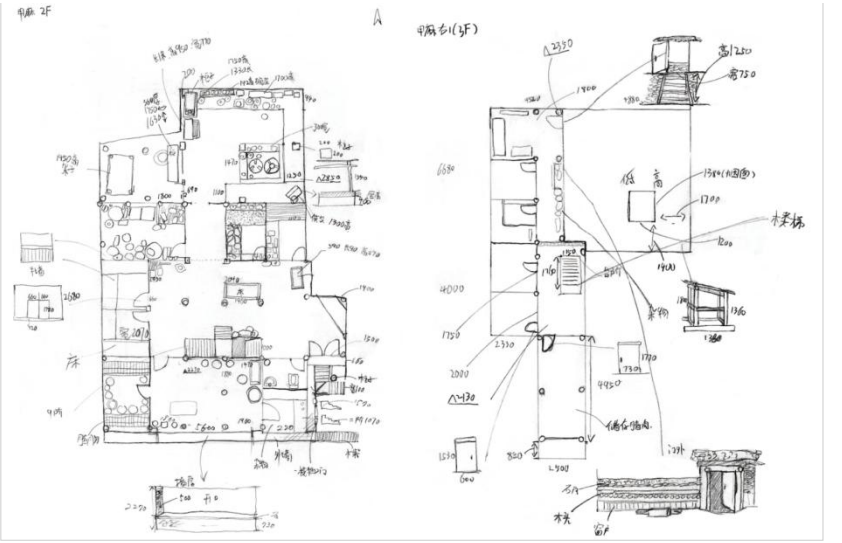
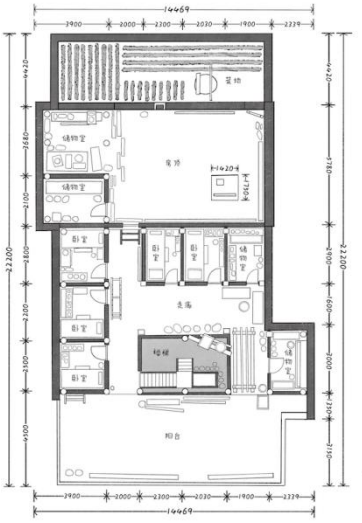
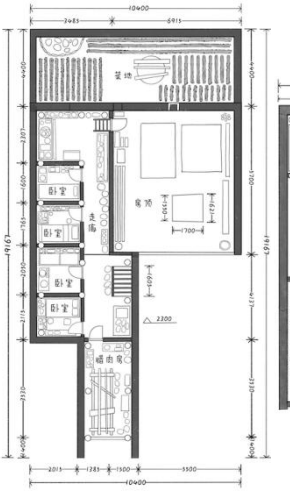
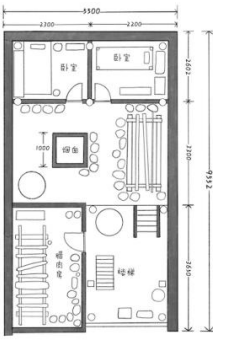
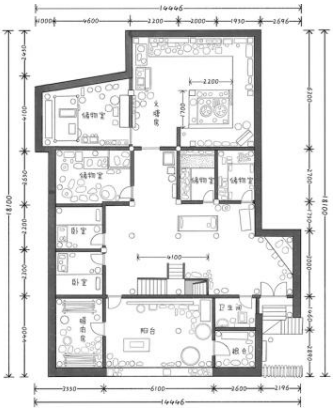
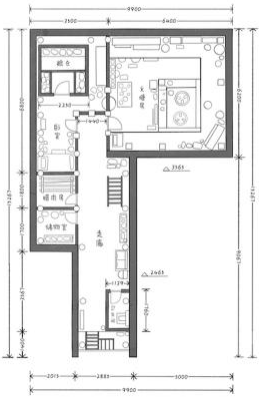
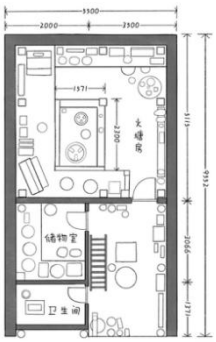
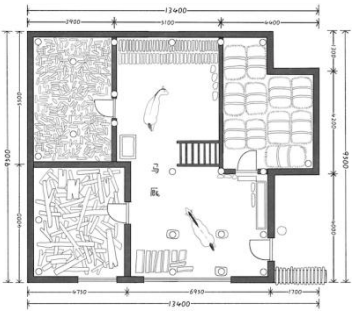
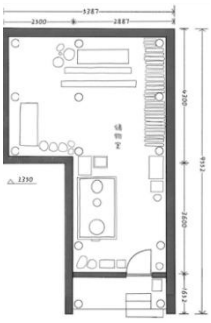
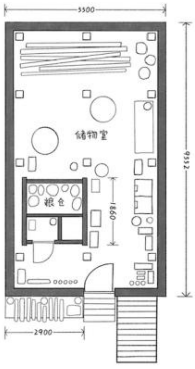


Fig. 4 Selected On-Site Hand-Drawn Floor Plans

Through the collaboration of the research team, hand-drawn floor plans of the sample houses were first completed on site as primary records of spatial information. Some of these on-site hand-drawn floor plans are presented above. The team then carried out standardized digital processing and computer-based organization of these original materials, transforming them into base drawings that could be directly used for spatial modeling. Through this series of procedures, the originally complex spatial relations of the sample houses were gradually organized into a set of analyzable and verifiable basic materials.

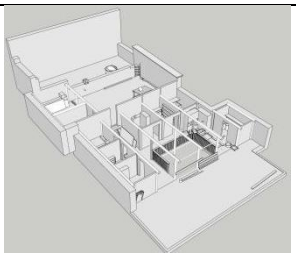
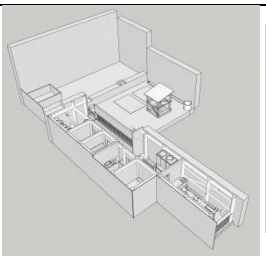
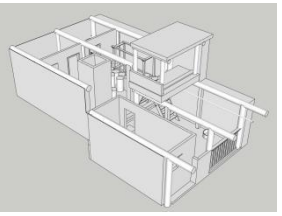
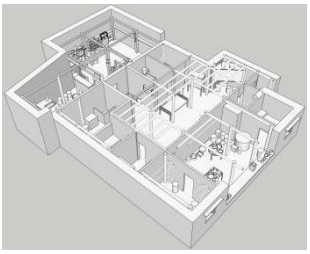
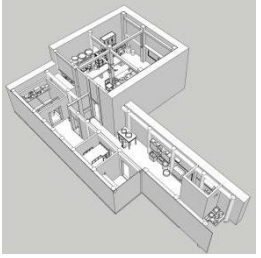
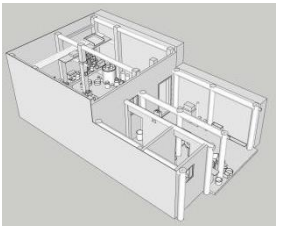
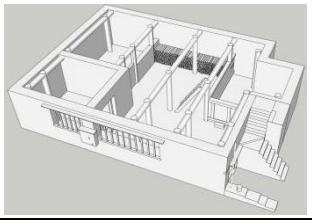
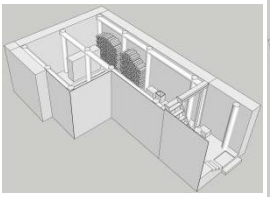
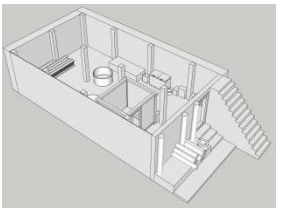
Table 1. Summary of Floor Plans of the Three Typical Buildings

Floor	House A	House B	House C
F1			

Floor	House A	House B	House C
F2			
F3			

After the measurement and integration of the floor plans had been completed, the study further introduced three-dimensional modeling as an intermediate step in the creative process. For reasons of operational efficiency and spatial control, SketchUp was selected as the modeling software. In the modeling process, the organized floor plans were first used as base drawings, on which walls, partitions, and door and window openings were constructed level by level, while the volumetric form of each floor was established according to the measured story heights. Subsequently, key structural components and fixed facilities, including beams, columns, stairs, hearths, and altars, were added on the basis of on-site photographs. Irregular spaces and complex nodes were repeatedly checked and corrected through comparison among drawings, measurement data, and image materials, thereby gradually improving the accuracy of the model. The final result was a digital spatial sample system that could be observed by floor, compared as a whole, and repeatedly referenced, providing a stable basis for subsequent storyboard design and image translation.

Table 2. Layered 3D Models of the Three Typical Buildings

Floor	House A	House B	House C
F1			
F2			
F3			

Three-dimensional modeling provided important support for the subsequent development of the images. Through repeated testing and sectioning of the model, spatial relations and viewing angles could be verified before the project entered the storyboard stage, thereby reducing the cost of repeated trial and error. As a result, later image creation no longer relied primarily on subjective imagination of space, but was grounded in a more explicit spatial reference. In this way, the stability of spatial translation in the picture book was significantly improved, and the creator was better able to deal with the depiction of complex architectural spaces.

The translation from the spatial model to the final picture-book image was not a process of direct copying, but rather one of conscious reinterpretation based on the model. At the line-drawing stage, the model view was first adjusted: the original perspective views were systematically transformed into parallel projection, and the major elevation lines were kept perpendicular to the ground. This treatment enhanced the illustrative quality and overall clarity of the images, making complex spaces visually simpler and easier to read. In the representation of specific details, human activities, and scene objects, the creation did not remain confined to the model itself; instead, everyday adjustments were introduced on its basis, including the addition of human actions, the reinforcement of daily-life details, the arrangement of narrative scenes, and moderate aging effects to reduce the rigid regularity of the model and infuse the image with a more vivid sense of lived life. Finally, the line drawing was transferred onto paper with the aid of a light box, and watercolor was then used to complete the rendering of texture and atmosphere. In this way, a complete translation chain was formed, extending from floor plans to spatial models and finally to hand-painted images (Fig.5-7).

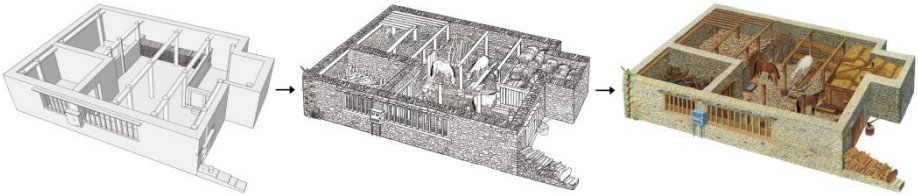


Fig. 5 From Spatial Model to Line Drawing Correction and Final Illustration (1)

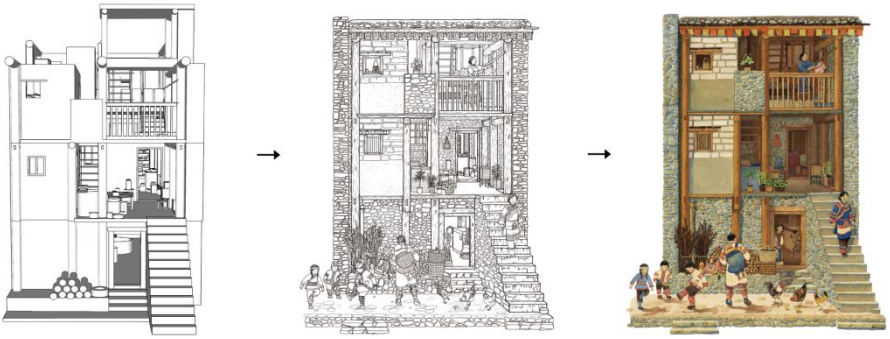


Fig. 6 From Spatial Model to Line Drawing Correction and Final Illustration (2)

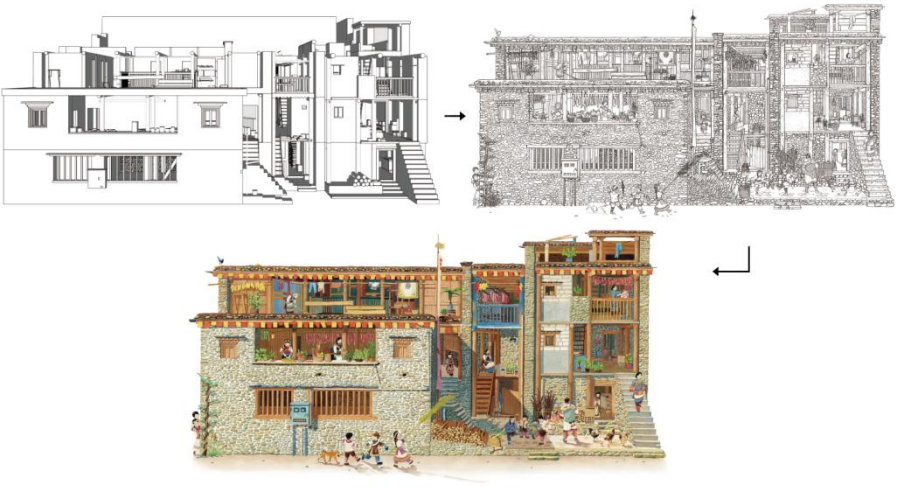


Fig. 7 From Spatial Model to Line Drawing Correction and Final Illustration (3)

4 Methods of Picture-Book Translation

In the process of translation, the key issue does not lie in whether the creator has mastered modeling tools, but in how the complex architecture of the village can be transformed into two-dimensional references that are drawable, controllable, and reusable. In the case of Eya Village, where buildings are characterized by dense spatial layering, strong enclosure, and non-standardized forms, photography and sketching alone are insufficient to support the long-term consistency of form accuracy and spatial coherence throughout the picture book. In response to this problem, the study gradually developed a pathway centered on digital spatial reference [7]. From a technical perspective, this pathway can be summarized into three stages—input,

operation, and output—and generates intermediate results such as data records, floor plans, and a model viewpoint library, thereby turning the technical pathway into a repeatable workflow.

Table 3. Input – Operation – Output Pathway

Stage	Input	Core Operation	Output
Field Surveying	Measuring tape, camera, notebook, and pen	Simultaneous measurement, drawing, and photography	Data sheets; atmosphere photo collection
Hand-Drawn Floor Plan	Measurement data and photographs	On-site visualized floor plans with annotated measurement data	Hand-Drawn Floor Plan
Digital Floor Plan	Hand-drawn floor plans; Adobe Illustrator	Converted into digital floor plans in Adobe Illustrator with unified scale annotations	Digital Floor Plan
3D Model	Digital floor plans; floor-height data; SketchUp	Build walls by extrusion in SketchUp and create the model	3D Spatial Model
Spatial Section	3D model; storyboard requirements	Section and select views to export the required sectional drawings	Viewpoint library: section, semi-section, and oblique views
Hand-Drawn Translation	Sectional drawings; light box; Procreate	Refine line drawings in Procreate and transfer them onto paper with a light box	Hand-Drawn Line Drawing
Illustration Rendering	Hand-drawn line drawing; watercolor tools	Render the final image in watercolor on the paper-based line drawing	Watercolor Illustration

5 Conclusion

Through the coordinated use of field surveying, two-dimensional floor plans, three-dimensional modeling, and hand-drawn translation, this study developed a method for translating complex village spaces. The method provides a relatively stable spatial basis for picture-book creation, improves the accuracy of proportion, perspective, and spatial relations in complex architectural scenes, reduces uncertainty during the creative process, and enhances both the feasibility and overall consistency of final image production. However, its applicability depends on one basic prerequisite: the research object must possess spatial relations that can be systematically organized, and relatively reliable spatial information must be obtainable.

References

[1] Cheng, Y., Hu, S., Yang, R., et al.: Protection and utilization of Chinese traditional villages oriented toward rural revitalization: Challenges and prospects. Journal of Natural Resources 39(8), 1735–1759 (2024) (in Chinese)

[2] Ministry of Education of the People's Republic of China: Notice on Issuing the Guidelines for Improving Education on Fine Traditional Chinese Culture (2014) (in Chinese)

[3] Nikolajeva, M., Scott, C.: How Picturebooks Work. Routledge, London/New York (2001)

[4] Liu, W., Zhang, Y., Liang, L. (illus.): Exploring Chinese Vernacular Dwellings. Electronic Industry Press, Beijing (2023) (in Chinese)

[5] Xie, X.: Childhood in the Courtyard House. Tiantian Publishing House, Beijing (2021) (in Chinese)

[6] Xie, X.: Tulou Across Time and Space. Tiantian Publishing House, Beijing (2021) (in Chinese)

[7] He, Z., Liu, J., Tian, J., Gao, C.: Research on the digital protection and inheritance of traditional villages based on the full life cycle. China Survey & Design (10) (2023) (in Chinese)