

Research on Architecture and Decoration Design of Kazakh Ethnic Residential Buildings in Ili

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Abstract: *Xinjiang has long been a region characterized by a diverse population, with various ethnicities coexisting and evolving over time. Each ethnic group has developed architectural spaces in accordance with their distinct ways of life and cultural preferences. Examining the residences of the Kazakh ethnic group in the Ili region provides a case in point. These dwellings are purposefully designed by the Kazakh people to align with their methods of production and lifestyle, intricately shaped by the influences and limitations imposed by the local geography. These residences demonstrate a notable level of adaptability and practicality. The distinctive decorative elements found in Kazakh ethnic residences serve as visual expressions of the Kazakh cultural legacy. Modified and refined to suit the constraints of the geographical surroundings, these homes not only showcase a strong sense of ethnic identity but also mirror the dynamic cultural nuances intrinsic to the Kazakh ethnic group.*

Keywords: *Decorative design, residential architecture, Kazakh ethnic group*

1. Introduction

Xinjiang Uygur Autonomous Region has rich ethnic culture and diverse ethnic groups. According to the latest population census data, there are 56 ethnic groups in Xinjiang. Ili Kazakh Autonomous Prefecture is located in the northern part of the Tianshan Mountains in the western part of Xinjiang Uygur Autonomous Region, in the Ili River Valley. The unique traditional houses of the Kazakh ethnic group in this region are unique architectural forms created by combining their own production methods and living habits, containing rich ethnic culture, strong ethnic characteristics, and reflecting strong ethnic customs. Combining the historical development background of the Kazakh people in Yili, sorting out the formation of Yili Kazakh residential architecture, clarifying the decorative design characteristics of Yili Kazakh residential architecture, is an effective response to the development of traditional residential buildings in border areas^[1].

2. Formation of the Architectural Framework of Kazakh Ethnic Residences in Ili

The traditional architecture of the Kazakh ethnic group stands as a testament to the historical development of the Kazakh people, shaped by their practical experiences and essential life needs. One noteworthy example of traditional Kazakh architecture is the yurt, a dwelling with a rich historical legacy. Descriptions from ancient Central Asian nomadic living customs, such as those recorded in the account of Princess Xijun, who married into the Wusun tribe during the Western Han Dynasty, vividly portray the use of yurts: "A round tent as the room, mats as walls, with meat as food and kumis as drink." The nomadic lifestyle of the Kazakh people, spanning generations, and the necessity to adapt to seasonal migrations in spring, summer, and autumn, led to the creation of the yurt as a simple yet practical dwelling to fulfill their life requirements. This architectural form stands out as the most prevalent and distinctive among traditional Kazakh ethnic buildings, characterized by its straightforward structure and robust ethnic identity.

Xinjiang, as a pivotal region connecting domestic and international routes of the Silk Road, showcases significant geographical, climatic, and historical-cultural features. These factors collectively contribute to the unique regional characteristics observed in traditional residential architecture in Xinjiang, marked by distinctive formal features and a rich ethnic culture.

2.1. Geographical Environment

Xinjiang, located in the northwest region of China, boasts a diverse and intricate terrain. In the Ili

region of Xinjiang, home to a Kazakh community often referred to as the "Jiangnan on the Frontier," life unfolds amidst mountains, rivers, and expansive grasslands, where the Kazakh yurts stand as shimmering white pearls scattered across the vast prairie.

The traditional architecture of various ethnic groups is intricately connected to their geographical surroundings. The unique features of a nation's history and culture are interwoven with the distinct characteristics of its geographic location. Human history and cultural development, marked by advancements in material production and technology, are profoundly influenced by the geographical environment. Disparities in geographical settings shape regional cultural traits, giving rise to diverse customs and habits.

The Kazakh people in Xinjiang, with a history spanning over two thousand years and evolving from ancient nomadic tribes like the Wusun, maintain a deeply rooted nomadic culture. A significant population resides in the northern regions of Xinjiang, particularly concentrated in the Ili area, which encompasses vast grasslands like the Narati Grassland and Tangbula Grassland. Additionally, a smaller portion resides in other areas. The Kazakh people's nomadic lifestyle entails constant movement in search of abundant water and pasture resources, necessitating periodic migrations during spring, summer, and autumn.

Xinjiang's overall climate exhibits a typical continental pattern, characterized by hot summers, cold winters, and low precipitation. The Ili River Valley, surrounded by mountains, enjoys a mild and humid climate, providing favorable natural conditions. The mountains encircling the Junggar Basin and Ili Basin serve as excellent summer pastures, while river valleys and hillsides naturally transform into winter pastures. Thriving in this rich natural environment, the Kazakh people not only maintain a harmonious relationship with nature but also actively adapt and shape their surroundings through continuous practical experiences, seeking a sustainable way of life. Proficient in utilizing local resources, the Kazakh people have coexisted with the natural environment for thousands of years, viewing the incorporation of natural elements into their architecture as a reciprocal process between humans and nature.

2.2. Ethnic Characteristics

The history of the Kazakh ethnic group is ancient, and as one of the older transnational minority groups in China, the majority of Kazakhs in China are located in the northern regions of Xinjiang, including Ili and Altai. A small portion resides in the autonomous county of Mulei Kazakh and in some areas of Hami, with a very few dispersed in other inland regions. The majority, however, is found in Kazakhstan. Stretching along the northern foothills of the Tianshan Mountains to the west of the Altai Mountains, covering an area of over 3 million square kilometers, this region has been the traditional homeland of the Kazakh people from ancient times to the present. The Kazakhs living in this region share a common language without dialects, enabling free communication even with Kazakhs in Kazakhstan. The only difference lies in the fact that Chinese Kazakhs use Mandarin as their second language.

There is a legend about the ethnic origin of the Kazakh people related to a swan. It is said that a leader named Qalgha'dir was highly respected and loved by the people. After losing a war and sustaining severe injuries, he walked alone across the vast and desolate Gobi Desert during scorching heat. Exhausted and thirsty, he collapsed on the barren desert. At that moment, a group of white swans appeared and saved his life. One of the swans transformed into a beautiful maiden, and they became husband and wife. Soon, the "Swan Maiden" gave birth to a boy named Kazakh, meaning "white swan" in their language. However, this is a folklore about the origin of the Kazakh people—a manifestation of the kind wishes and deep ethnic sentiments of the benevolent Kazakh people.

The Kazakh people, with a history deeply rooted in nomadic traditions and navigating the complex geographical landscape of Xinjiang characterized by substantial temperature variations between day and night, have found, through extensive practical experience, that the yurt, constructed with locally available materials, is exceptionally suited to their nomadic lifestyle. Over years of iterative practice and refinement, the Kazakh yurt has evolved into an ideal living space capable of withstanding the challenges posed by wind, snow, and significant temperature fluctuations day and night. These yurts, akin to luminous white pearls, grace the expansive grasslands, offering the Kazakh people a warm and sheltered refuge amidst the winds.

2.3. Regional Culture

Traditional dwellings of various ethnic groups are inevitably shaped by geographical environments, ethnic cultures, and local regional cultures. Xinjiang, situated in the northwestern border region of China, holds the distinction of being the largest province in terms of land area and is home to a diverse array of ethnic minorities. Over two thousand years ago, Xinjiang played a pivotal role as a gateway for the outward expansion of Chinese civilization, fostering the exchange and dissemination of East and West cultures. In 138 BC, Emperor Wu of the Han Dynasty dispatched Zhang Qian to explore the Western Regions, thereby expanding transportation routes between the East and West and establishing Xinjiang as a crucial hub on the ancient Silk Road.

The northern region of Xinjiang, positioned on the western border of China, once served as a significant grassland cultural area on the western frontier. Grassland culture is integral to the rich Chinese cultural tapestry, particularly as it represents the most widely distributed regional culture in the Chinese context. Throughout recorded history, during the period when the central plain established unified agricultural regimes, nomadic tribes on the expansive northern grasslands successively formed unified pastoral regimes. The grassland culture system, rooted in northern nomadic culture and complemented by agricultural culture in the central region and mountainous farming culture in the southern area, constitutes one of the three major types of economic and cultural regions in China.

Grassland culture, as a regional culture, emerged and flourished within the specific geographic confines of the vast northern grasslands in China. Despite different ethnic groups creating cultures at distinct times, they all utilized the grassland's unique geographical environment as a foundation, establishing their internal connections and contributing to the formation of a complex grassland culture. The concept of the grassland is not only historical-geographical but also crucial in a cultural-geographical context. As nomadic civilization took shape, grassland culture entered a new stage of historical development, evolving into a unique culture characterized by historical unity, continuity, and significant developmental potential. As a unity of regional and ethnic culture, grassland culture reflects the integration of nomadic culture with other economic cultures. Different cultural forms introduce new elements and vitality into grassland culture, showcasing its potential for continuous development through the constant interaction and absorption of traditional and modern cultures.

3. The Decorative Design Features of Ili Kazakh Ethnic Residential Architecture

3.1. Morphological Structure

The yurt of the Kazakh people, in terms of its morphological structure, is distinct from the Mongolian yurt. The Kazakh yurt is a typical dome structure, consisting of a spherical-shaped top, a truncated cone-shaped middle, and a cylindrical main body. Structurally, it is mainly composed of a dome that supports the top, inclined struts that transmit upper loads and support middle loads, and a main structural lattice frame that transmits and supports all loads. The top ring of the Kazakh yurt is small, the inclined struts are long with a curved bottom, and the surrounding wall formed by the lattice frame is low.

The appearance of the yurt is simple and straightforward. The parabolic wooden arch of the yurt's roof is a typical non-tensioned double-twisted parabolic arch, and the lattice frame is a lattice structure that is also commonly seen in modern architecture. The main body is connected to wind-resistant ropes and sturdy wooden stakes^[2].

The Kazakh yurt belongs to a tied skeleton structure, with the skeleton consisting of a lattice fence, door frame, roof struts, and skylight. The skeleton is mostly made of red willow wood, and the protective part is mainly made of felt, which is produced from sheep wool. According to the structure and location of maintenance, the felt of the yurt is divided into top felt, awning felt, and surrounding felt from top to bottom. The maintenance structure of the yurt consists of three parts: top, middle, and bottom. The square felt covering the top arch is called the top arch cover, which plays a protective role against cold and water and also serves as a skylight. The middle part is composed of two truncated cone-shaped unfolded surface felts, forming a maintenance structure called the inclined surface cover, which is often decorated with various patterns. The yurt is a building created by the Kazakh people for nomadic life, so the felt of the yurt needs to be portable, easy to assemble, and simple. In addition to felt as a maintenance structure, the yurt also has grass curtains as a protective structure, made from reed

grass, inserted between the lattice frame and lattice cover to stabilize the shape of the yurt.

The arch of the yurt is a load-bearing structure composed of a circular wooden frame with many pierced holes and multiple parabolic wooden arches on top. The circular wooden frame on top is a closed circular structure. The number of parabolic arches on top is determined by the size of the yurt, usually 2, 3, or 4, and they are installed crisscrossed on top. According to Kazakh customs, after the top arch is covered, its shape must be a spherical shape, and the four corners of the top arch cover must point to the east, west, south, and north. The most significant feature of the arch shape of the yurt is the maximum usage of the area^[3].

The most important structural component of the yurt is the lattice frame responsible for bearing the main body structure, with a planar shape in the form of a parallelogram. The characteristics of a parallelogram are that the sides can simultaneously become longer or shorter, determining the size and height of the yurt. Therefore, the Kazakh people use the number of lattice frame sections to determine the size of the yurt. The rods in the lattice frame have specific requirements for their shape during the manufacturing process, with each rod having different radii and bending points to create an orderly, aesthetically pleasing, and functionally effective lattice frame to support the weight of the entire yurt. The lattice frame is not only a load-bearing component but also a decorative element in the yurt. A lattice frame generally consists of long, medium, and short rods, typically 14 long rods, 9 medium rods, and 9 short rods. Usually, for easy calculation and good luck, the Kazakh people set the number of rods in the lattice frame of a six-section yurt to be 192. Among them, there are 108 medium and short rods and 84 long rods.

The connection between the lattice frame and the inclined strut is a support, which supports the inclined strut to transmit internal forces and resolves moments to zero, also called a hinge point. The number of supports for each lattice frame varies depending on the lattice frame's junction, determining the number of inclined struts.

Another important component of the yurt is the door frame, which, like the lattice frame, plays a supporting and load-bearing role. The structure of the door can also be subdivided into four parts: the forehead, left frame, right frame, and threshold, usually made of pine wood. The door face is generally decorated with some Kazakh patterns and patterns. Compared to other residential buildings, the yurt's door is generally smaller, allowing for better insulation in summer and protection against cold in winter, and the yurt's door is usually located in the direction away from the wind.

3.2. Spatial Layout

Yurts are generally categorized into small yurts and large yurts. Small yurts have limited interior space and are not intended for a large number of occupants. Typically used as temporary dwellings during migrations, small yurts do not emphasize intricate interior layouts. On the other hand, large yurts pay meticulous attention to interior design, organizing utensils, food, miscellaneous items, bedding, etc., in a systematic manner^[4].

Before constructing a yurt, it is crucial to determine the position of the central hearth and the direction of the door. The hearth, located at the center, serves as the focal point of indoor activities. The size of the space is determined by a circular plan with the distance from the center to the door as the radius. Yurts can be considered multifunctional and flexible living spaces, with colorful blankets often adorning the felt walls for decoration.

Directly opposite the door inside the yurt is the elevated seating area, reserved for honored guests. The kitchen space is on the right side, featuring various cooking utensils and cookware, while the left side is allocated for miscellaneous items, accommodating tools, horse saddles, and other items for the convenience of nomadic life.

The area near the entrance inside the yurt, in frequent contact with the outdoors, is referred to as the "dynamic" zone. This area is divided into the kitchen and miscellaneous areas, separated by the door, ensuring minimal interference between the two. Further inside is the living space, primarily used for family activities, entertaining guests, dining, sleeping, and household chores—the main and relatively tranquil zone, known as the "static" area.

With the evolution of time, the position of the hearth inside the yurt has shifted from the central region to the kitchen space. Ultimately, for convenience in indoor activities, it has been moved outside, only placed indoors when necessary. The Kazakh people place significant emphasis on customs and generational relationships, evident in the careful arrangement of seating in the living space. In the right

half of the living area, seating and resting spaces are designated for male family members, with the upper seat reserved for elders and guests and the lower seat for younger members. The left half is dedicated to female family members, where women engage in activities such as sewing and nursing infants. Similar to the right side, the upper seat is for elders and guests, and the lower seat is for younger members.

Thus, the arrangement of the interior space in a yurt is highly intricate, tailored to the diverse needs of family members, reflecting the wisdom of the Kazakh people.

3.3. Architectural Detail Decorations

The yurt, as a traditional dwelling of the Kazakh people, exhibits variations in architectural details across different regions. Set against the vast backdrop of the grasslands, the Kazakh people adorn their yurts according to personal preferences and traditional cultural motifs, resulting in nuanced and distinctive artistic aesthetics reflective of their ethnic identity.

In terms of architectural ornamentation, the patterns have adapted to the intricate structural forms of the yurt. While there is no fixed color palette, a preference for highly saturated primary colors such as white, blue, red, and green is commonly observed. In the Ili region, the Kazakh people particularly favor the color blue. These decorative elements are predominantly found on the doors, the top ring, and interior hanging tapestries.

The doors of Kazakh yurts come in both single and double-leaf configurations, chosen based on specific requirements. Comprising a frame and door leaf, the door frame combines the lintel and threshold into a single structure. The frame consists of two vertical posts, a lintel, and a threshold. The vertical posts have apertures for connecting with the lattice structure, while the lintel features support points connected to the inclined struts, usually with several support holes to accommodate the connection of the inclined struts. As the door also serves a load-bearing function, its height matches that of the extended lattice structure. Yurt doors are generally modest in size to effectively regulate temperature, providing insulation against both heat and cold. During yurt assembly, the door is strategically positioned to face a leeward direction, often towards the east or southeast, and is elevated from the ground to prevent dampness and winter chill^[5].

The door leaf often incorporates traditional Kazakh patterns, such as botanical or animal motifs, highlighting the ethnic character of the Kazakh people through these decorative elements.

The top ring, also known as the dome ring, is a crucial structure within the yurt. It serves to secure the overall yurt structure and facilitates ventilation and natural lighting in the interior space. As yurts typically do not have windows, the top ring can be considered a skylight. Kazakh people usually uncover or partially uncover the top ring cover during regular days, and when winter arrives, they cover it again, leaving a small opening for ventilation during cooking. The opening is sealed when not in use. Some Kazakh individuals adorn the interior of the top ring with traditional patterns for decorative purposes.

The Kazakh people have a penchant for using tapestries as decorations, leading to an abundance of tapestries adorning the interior space of the yurt. Since yurts are mobile dwellings designed for easy relocation, intricate carved furniture and other objects are not suitable for interior decoration. Tapestries serve this purpose effectively, acting like contemporary wallpapers, enhancing the aesthetics and harmony of the indoor space while highlighting distinctive ethnic characteristics. Tapestries are highly practical, serving as room dividers when hung on the interior walls of the yurt and providing insulation against cold.

Tapestries often feature a variety of decorative patterns, including flowing water motifs, sunrise flowers, sinuous lines, and depictions of various flora and fauna. When hung around the walls, these tapestries not only enhance the visual appeal but also serve as a barrier against moisture and cold, contributing to the overall attractiveness of the interior space. In addition to wall tapestries, there are also flower felts, mattress felts, and cloak felts placed on the floor, offering a unique and stylish interior decoration^[6].

The exterior of the Kazakh yurt is also adorned with felt blankets, primarily covering the top arch cover, inclined surfaces, and structural framework. These exterior felt blankets typically feature simple embroidery patterns, including motifs inspired by flora, fauna, and geometric shapes. They are laid on the exterior to serve as protection against wind and rain. Given that yurts are mobile structures designed for relocation on the grasslands, the requirements for these exterior felt blankets include being

lightweight, easy to assemble, and convenient to carry.

4. Conclusion

In the vast expanse of Xinjiang, the Kazakh yurt stands as a radiant gem on the boundless grasslands, a creation born through the course of history. The yurt is an architectural space crafted by the Kazakh people in response to their practical needs and development. Its distinctive structure, spatial layout, and ethnically characteristic decorations are worthy subjects of study and preservation.

This study focuses on the yurts of the Kazakh people in Ili, exploring and discussing various aspects, including the geographical environment, ethnic characteristics of the Kazakh people, regional culture, the morphological structure of the yurt, its spatial layout, and detailed decorations. It becomes apparent that the yurt is an architectural creation adapted to the nomadic lifestyle of the Kazakh people. Although some Kazakhs have abandoned nomadic life with the passage of time, they still have a strong affinity for yurt architecture. Furthermore, with the continuous development of the tourism industry, the number of people visiting Ili for tourism has increased annually. Many herders have gradually transformed yurts into unique guesthouses, allowing visitors to experience the distinctive ethnic culture.

While the external construction of Kazakh yurts may appear simple, their layout and structure demonstrate unique considerations. The specific decorative patterns reflect the ethnic characteristics inherent to the Kazakh people and the cultural ambiance of Xinjiang.

References

- [1] Bortolini S D C A, Grisci I L C, Costa D E A. *Living-working and the axiomatic of capitalism: a study based on media outlets in the architecture, decoration, and design segments*[J]. *Cadernos EBAPE BR*, 2020, 18(1):142-157.
- [2] Viktorovich A I, Pavlovna E Z. *Configuration of Desargue in architectural and design engineering* [J]. *Vestnik MGSU*, 2018,(9):154-160.
- [3] Wang X, Guo J, Liu X. *Application of New Wooden Structure Buildings under the Idea of Sustainable Development*[J]. *Journal of Research in Science and Engineering*, 2023, 5(12)
- [4] Ahani F, Etessam I, Islami G S. *Ornament in Contemporary Iranian Architecture (Case Study: Prominent Buildings in Tehran after the Islamic Revolution)*[J]. *Arts*, 2017, 7(1):1-1.
- [5] Guo Q L, Guo Q Y, Zeng X. *Research of Architectural Art and Environment Design of South Anhui's Ancient Residence*[J]. *Applied Mechanics and Materials*, 2014, 3309(584-586):111-114.
- [6] Riisberg, Vibeke, Munch, et al. *Decoration and Durability: Ornaments and their "appropriateness" from fashion and design to architecture*[J]. *Artifact*, 2014, 3(3)