Research Paper

Study on the spatial characteristics and heritage value of the ancient city of Mrauk-U, Myanmar

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Abstract

Mrauk-U is a historical city in the Rakhine state of Myanmar. It has an important historical position, distinct regional environment, and unique spatial features. Nourished by agricultural civilisation, maritime civilisation and religious culture, its urban space presents unique characteristics. This study analyses the site location, spatial form and layout the Mrauk-U city in order to examine how the agricultural, maritime and religious factors influenced the urban space of Mrauk-U. It is reveals that the people of Mrauk-U adapted and utilised the natural environment through appropriate planning ideas and methods driven by social needs such as agricultural irrigation, military defence, maritime trade and symbolism significance. They integrate the artificial with the natural and create urban spaces with distinctive characteristics. Therefore, it is concluded that Mrauk-U has shown an outstanding planning achievement in shaping cultural landscape, and has even become a model for the skilful integration of urban space and natural environment in Southeast Asia.

Keywords

Historical city, Spatial characteristics, Mrauk-U, Urban space

1. Introduction

The ancient city of Mrauk-U in the present-day Rakhine State of Myanmar was one of the most important historical capitals of the Arakan Kingdom in ancient Southeast Asia. The Arakan Kingdom was located in the western part of the Indochina Peninsula in the Bay Area, with the Rakhine Mountains to the east and the Bay of Bengal to the west. Existed from the 15th to 18th centuries, the Mrauk-U Kingdom was not only the most powerful kingdom in Arakanese ancient history but also became a maritime military power, a trading hub, and a religious centre in ancient Southeast Asia. Its capital city, Mrauk-U, became an important center of international trade and cultural routes in ancient times. As an outcome where humans rely on nature to create their living environments, the construction of human settlements is driven by social needs and shaped by human activities. The study of the spatial characteristics and value features of this historical city is an important way to understand the local history and culture and is of great academic and practical significance.

The historical urban spaces are important vehicles for reflecting the concepts and methods that ancient peoples employed in planning their living space. The capital city Mrauk-U ruled the coastal area west of the Rakhine Mountains for a long time, flourishing through the influences of agricultural, maritime and religious culture. This city presented a landscape quality closely combined with the natural environment in its urban spaces. Existing studies on Mrauk-U have mostly focused on its Buddhist architecture (Li, 2019),

urban forms (Wang, 2019), and religious landscapes (Zhou et al., 2024). However, there is insufficient research on how the overall urban spatial characteristics of Mrauk-U were formed. How did the ancient people of Mrauk-U harmonize and interact with the local natural environment and cultural factors in urban construction? The internal mechanisms and ideological influences have not yet been fully explained. In this context, this study aims to explore the urban spatial characteristics of the ancient city of Mrauk-U to foster a more in-depth understanding of its construction logic.

In recent years, our research team has conducted large-scale field studies on the ancient city of Mrauk-U, obtaining first-hand data such as three-dimensional topography and orthophotos of the city, which facilitates in-depth analysis of this historical city. The team utilized these original spatial data and referenced historical remains in combination with archaeological literature, historical maps, documented records, paintings, and artworks to speculate and reconstruct the spatial urban elements of ancient Mrauk-U. Based on the ArcGIS platform, a historical spatial information database and a digitized three-dimensional model of the city's urban space were created. Based on this, this paper examines the natural and regional environment of Mrauk-U and sorts out the main social factors influencing its urban development. Furthermore, it identifies the relationship between natural and artificial elements within the urban space, analyses the spatial characteristics of the ancient city under the influence of various social factors, explores the city-building ideas and wisdom of Mrauk-U that have been developed during the process of getting along with the nature, and summarizes the distinct values of this historical city.

2. Formation background of Mrauk-U

2.1. Natural environment

The Rakhine State has a tropical monsoon climate, resulting in a region rich in rainfall resources—conditions favorable for rice cultivation. The terrain around Mrauk-U rises in the northeast and descends toward the southwest, with the Rakhine mountain range extending in a "finger-like" pattern towards the plains. The valley plains of the Kaladan and Lemro rivers provide rare flatland in Arakan, with fertile land along their banks(Figure 1). The early capital names, Dhanyawadi and Vesali, mean "grain-rich region" and "land of abundant grains," respectively. Since ancient times, this area has been the center of power and home to Arakan's most important cities.

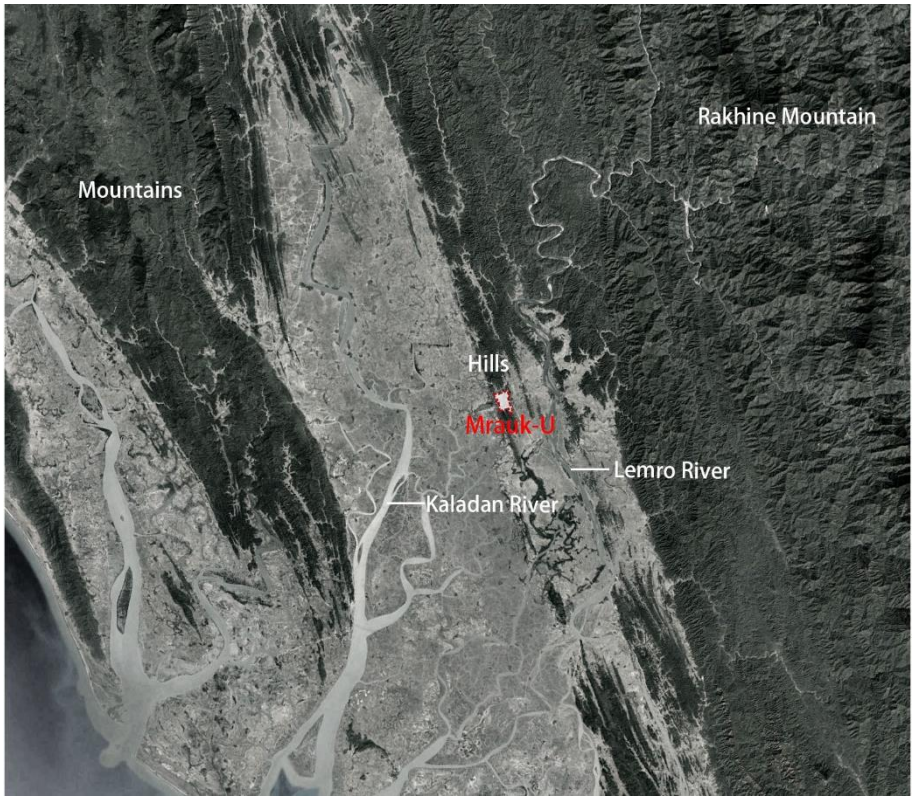


Figure 1. The geographical environment of Mrauk-U. Source: the author.

2.2. Social features

Mrauk-U served as the political, economic, and cultural center of Arakan Kingdom for over 350 years, spanning from 1430, when King Min Saw Mon ordered the construction of the capital, to 1784, when it was conquered by the Konbaung Dynasty. The city bore witness to the golden age of the Arakan Kingdom from the mid-16th to the mid-17th century.

The society of Mrauk-U was characterized by its agricultural, maritime, and religious culture. Firstly, Mrauk-U develops based on the agriculture civilisation. The rice civilisation was the essential material base for the formation of early Southeast Asian societies (Li, 2020). Abundant rainfall provided natural advantages for the agricultural production , which leads to the development of rice cultivation in Mrauk-U, and the total capacity of its rice warehouses far exceeded local consumption (U Shwe Zan, 1997).

Secondly, Mrauk-U has prospered under the nourishment of maritime civilisation. Proximity to the Bay of Bengal provided the natural basis for maritime trade in the Arakan region, where the rulers accumulated wealth for the country by engaging in international trade. Surplus rice was the main export product, shipped to the Indian subcontinent (Collis, 1973) and other regions. With its important access to the sea, Mrauk-U grew into a thriving trading hub on the east coast of the Bay of Bengal. A Dutch traveller, Schouten, came to Mrauk-U in 1660 (Tun Shwe Khine, 1992). He described it as the richest port city in Asia. All these indicate that Mrauk-U was an international city in its heyday.

Thirdly, Mrauk-U was deeply influenced by religious culture. The Arakan region became one of the earliest areas in Southeast Asia to receive the introduction of Indian religions in the process of external exchanges. The Kingdom of Mrauk-U was founded on Theravada Buddhism, with Buddhist thought deeply integrated into local social values. Pagodas and monasteries became essential spaces for the cultural activities in local

society (Li, 2011). Concurrently, the Rakhine people also revered guardian spirits believed to inhabit mountains, rivers, and lakes (Zhong & Yin, 2014). Religious beliefs, such as Buddhism and natural worship, became principal sources of cosmological ideas for the ancient people. Within this cultural framework, social needs for agricultural irrigation, military defense, maritime trade, and symbolic meanings were influential in the construction of the urban space of Mrauk-U.

3. The city's spatial characteristics driven by different demands

3.1. The urban space influenced by the need for agricultural irrigation

Driven by the fundamental needs of agricultural production, the ancient people of Mrauk-U emphasized assessing the topography and hydrology when choosing a city location. They made full use of natural resources to ensure an agricultural hinterland and abundant water supply.

The site of Mrauk-U was flat and openand was located in the largest plain area of the Arakan region. Mrauk-U and earlier Arakan capitals (e.g., Dhanyawadi, Vesali, Launggyet) were all situated in the plains of the Kaladan and Lemro river valleys in Arakan. This area is the largest plain in Arakan and the water is relatively plentiful. Ancient Arakanese people utilized this relatively open expanse, positioned between the sea and mountains, as an early power center as far back as the beginning of the Common Era. Mrauk-U leveraged the agricultural foundations cultivated over generations to establish its capital, optimizing the limited resources available in the plains.

Moreover, Mrauk-U was strategically located within a region with an abundant water system. Hydrological analysis shows that Mrauk-U sits at the watershed junction of the Kaladan and Lemro Rivers. This location not only provides higher terrain but also enables the city to utilize the rivers both to the east and west. This arrangement ensures a relatively stable water supply. Enclosed by rivers and fertile lands, Mrauk-U has an ideal natural base for irrigation. Additionally, large artificial lakes at the city's borders serve as reservoirs, securing water for urban needs. Together with numerous smaller tanks throughout the city, they irrigate crops during the dry season, thereby extending the irrigation period.

3.2. The urban space influenced by the need for military defense

Driven by the need for military security, the ancient people of Mrauk-U emphasized the organisation of the urban spatial pattern when selecting and designing the city's layout and made full use of natural defenses to enhance its security.

Firstly, the city was constructed in a location suited for both offense and defense. On one hand, Mrauk-U was situated at the juncture between foothills and plains, bordered by the Rakhine Mountains to the east and north and distant mountains to the west, creating a relatively enclosed spatial environment that facilitated the establishment of a secure spatial structure. Additionally, the wide, deep creeks to the west served as natural barriers, providing more effective protection than moats (Collis 1973, p. 174). On the other hand, the city was set back approximately 60 kilometers from the coast, creating a buffer zone that could reduce the risk of sudden attacks.

Secondly, the city layout was designed to be highly defensible, creating a defensive barrier that integrated man-made and nature. Mrauk-U lies at the southern tip of the Sin-taung mountain range, with hills to the north and south that are challenging to traverse, providing advantageous conditions for military defense. To strengthen capital defenses, the natural mountains were supplemented with artificial fortifications tailored to specific defense needs in different directions. For example, the western lowlands, guarded by numerous deep tidal streams, posed a challenge for enemy crossing; thus, no additional artificial moat was

required. On the contrary, the eastern section was more exposed and served as the primary entry point for invaders. This area became a key defensive focus, reinforced with walls, lakes, and forts to offset its natural vulnerabilities. The eastern walls and the artificial lakes ran parallel to each other in an east-west direction. The artificial lakes were built with false entrances, to confuse and defeat the enemy (Collis, 1973, p. 174). The walls extended into the mountains, with forts such as Myataung and Laythartaung located in the southeastern hills. Additionally, where rivers intersected fortifications, water gates and batteries were often installed (Collis, 1973, p. 179).

In Mrauk-U, the hills, water systems, and city walls formed a cohesive defensive structure. The natural barriers of hills and rivers surrounding the palace were closely integrated with the city's artificial outer walls and lakes, creating a fortified boundary approximately 19 kilometers in circumference. As described in the Glass Palace Chronicle of the Kings of Burma: "Situated on the top of a hill, the city was strongly fortified."

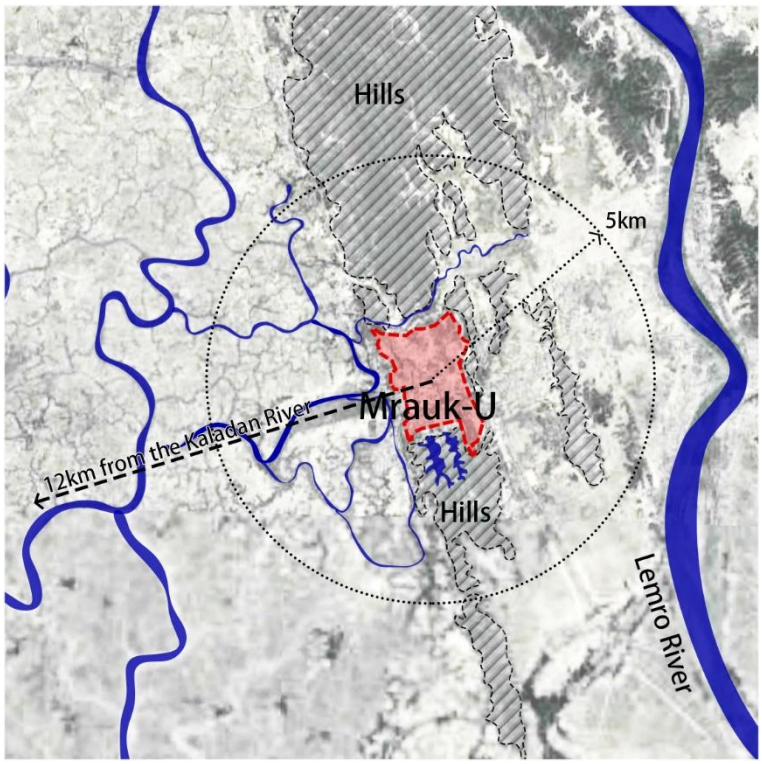


Figure 2. The natural defence barriers of Mrauk-U. Source: the author.

3.3. The urban space influenced by the need for maritime trade

Driven by the economic demand for foreign trade, the ancient people of Mrauk-U focused on shaping an open business environment when laying out the city and developed a comprehensive water transportation network and corresponding supporting facilities.

The city utilized its geographical location to construct a network of rivers and lakes connected to the sea. On one hand, Mrauk-U is located along a major waterway, forming the basic layout connecting the river and the sea. The city site is situated 12km from the Kaladan River on the west side and 5km from the Lemmer River on the east side, allowing simultaneous access to both rivers and providing waterway access for distant ships. Although the city was not built directly by the sea, the rivers on the east and west provided direct access to the sea, establishing a close connection with it. On the other hand, the construction of the

city further enhanced water transportation links with the surrounding areas. Some Jesuits compared Mrauk-U to Venice, recognizing similarities between the two. Father Manrique described Mrauk-U as follows: “A considerable river traverses the city, dividing it into many branches, so that most of the streets are waterways, navigable even by large vessels”(Collis, 1973, p. 179). By utilizing the Alezi and Aungdat rivers as the backbone, canals were dug throughout the city (Figure 3), which strengthened control over the Kaladan and Lemro valleys, allowing agricultural products and handicrafts from the Lemro River to enter Mrauk-U's central market (U Shwe Zan, 1997).

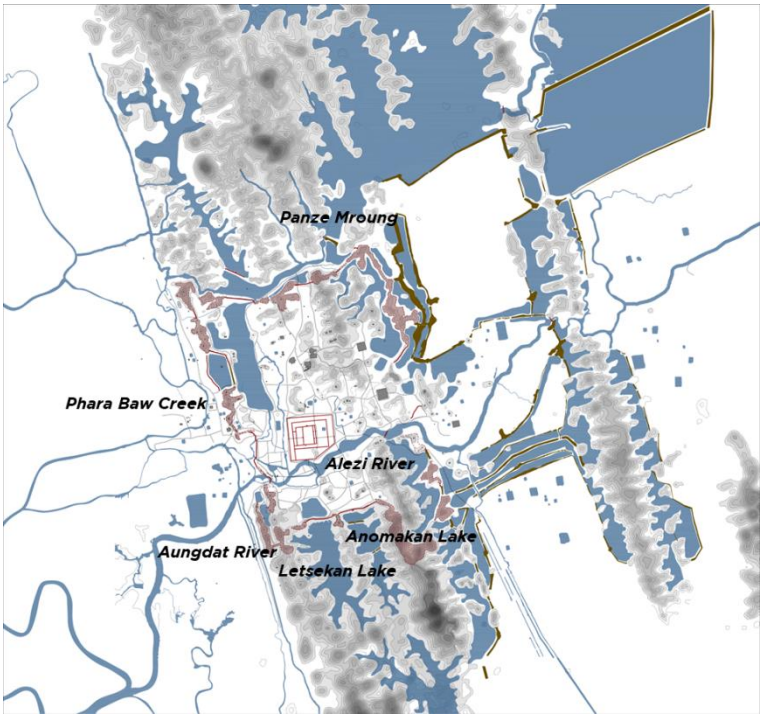


Figure 3. The water system of Mrauk-U. Source: the author.

Moreover, foreign trade support institutions and spaces, such as foreigner communities, port towns, and customs offices, were established based on the features of different positions. The western side of Mrauk-U, adjacent to the sea, served as the primary direction open to Western European traders. In the western part of the city, there were Portuguese community (referred to as Daingri-pet) and Dutch community (referred to as Bandel) along the main river route. The port of Aungdat was the main harbor on the western side serving foreign merchant ships. Leveraging the strong tides of the Kaladan River, the harbor was sufficiently large to accommodate foreign vessels (Raymond, 2002, p. 183). To the south, along the Lemro River, the port towns of Paungdok and Minbya were established, facilitating access to the southern provinces and eastern kingdoms (Tun Shwe Khine, 1992). Additionally, Buting Island**,** located at the mouth of the river, served as the custom for the Arakan kingdom, acting as a gateway linking the outer sea with the Mrauk-U region. According to the 17th-century Dutchman Schouten, merchant ships from the outer sea could only navigate into the Kaladan River to engage in trade with the assistance of a pilot after obtaining permission from the king through a treaty and hoisting a specific flag as a sign of goodwill (Raymond, 2002, p. 183).

3.4. The urban space influenced by the need for symbolic meanings

Driven by the psychological need for symbolic representation, the ancient Mrauk-U people devoted themselves to imbuing urban spaces with sacred meanings when laying out the city.

Firstly, they emphasized the positive significance of the city's location by invoking legends of auspicious omens that had occurred at the site. By using natural elements to convey divine meanings or omens, the location of the city was depicted as one marked by divine intervention and positive visions. The natural environment surrounding the Mrauk-U city site was endowed with symbolic significance, becoming a crucial basis for the location of ancient cities. Legend has it that the king, seers, astrologers and ministers were guided and supported by certain divine providences and omens while searching for a new site for the capital city. Initially, they encountered a strange well-dressed old man standing on the top of the Golden Mountain on the western tributary of the Lemro River, who called out to the king and pointed towards the Galon Mountain which is situated in the north-west of Mrauk-U. Subsequently, they witnessed a series of extraordinary sights where the weak creatures overcome the creatures seemingly more powerful than themselves, leading them to agree that this place was a providential land (Tun Shwe Khine 1992). These legends symbolized for the people the image of a robust capital city, reinforcing the rationale for the choice of this site.

Secondly, influenced by sun worship, the significant buildings exhibit an eastward-facing orientation. It is assumed that this was influenced by the natural worship. In nature, the east represents the direction of the rising sun, symbolizing positivity and sacredness in people's minds. Thus, orienting the buildings to the east establishes a connection between the material world and the natural order, enhancing their sacredness. This is evident in the layout of palaces and Buddhism buildings in Mrauk-U, such as the Shittaung Temple, Ratanabon Temple, and Zina Manaung Pagoda (Figure 4).



Figure 4. The typical temples or pagodas facing the east. Source: the author.

Moreover, the extensive construction of pagodas and temples contributed to the creation of a sacred urban landscape. In the Rakhine region, where Buddhist culture thrived, the establishment of pagodas and monasteries was viewed as a vital means of expressing religious devotion and demonstrating the king's power. Consequently, pagodas were widely constructed in Mrauk-U and were closely integrated with the elements of the natural landscape (Figure 5). A large number of pagodas were erected atop mountain ranges, enhancing their visibility by occupying elevated positions, thus forming sacred skylines for the city alongside the mountain ranges. Additionally, the pagodas atop the mountains are visible from the palaces

and other urban nodes. At the same time, many pagodas are situated near rivers and lakes, producing diverse waterfront landscapes. The pagodas, which symbolize the connection between the human and divine realms, are combined with the natural elements, which is also endowed with sacred meanings. As a whole, they constitute a cultural landscape imbued with strong religious significance, where human and nature are harmoniously blended.



Figure 5. The pagodas in Mrauk-U. Source: the author.

4. Conclusions

The study shows that agricultural, maritime and religious cultures and the natural environment have been skilfully combined in Mrauk-U, forming a historical urban cultural landscape with distinctive characteristics. Driven by the demand for agricultural production, the ancient people of Miaowu made comprehensive use of natural resources to ensure agricultural cultivation; driven by the demand for military defence, they made ingenious use of natural forces to strengthen their defence performance; driven by the demand for foreign trade, they made full use of natural water sources to enhance the convenience of waterway transportation; and driven by the demand for the shaping of symbolic significance, they imbued the city with sacred meaning by closely integrating the natural elements. Mrauk-U people realize or enhance the practical needs of the city in a way that is highly integrated with nature. Mrauk-U old city has made outstanding planning achievements in shaping cultural landscape and can be regarded as a model of the ingenious integration of urban artificial space and natural environment.

By analysing the urban space of the ancient city of Mrauk-U, we realise the influence of the local natural environment and social culture on the construction of the city and the unique spatial form it presents. Through this urban space highly integrated with nature, it can be seen that Mrauk-U 's urban construction not only follows the general principle of utilising local resources, but also makes good use of natural elements, showing remarkable construction methods in water management, military defense and cultural landscape shaping, which is a typical microcosm reflecting the characteristics of urban construction in the Southeast Asian.

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