BG Pulse Journal USA
ISSN:1947-2536 http://www.bgpulseusa.com/index.php/bg

THE FORMATION AND DEVELOPMENT STAGES OF ANCIENT KHWARAZMIAN ARCHITECTURE

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Abstract This article examines the formation of ancient Khwarazmian architecture, its principal stages of development, and its distinctive characteristics. It explores the evolution of residential and defensive architecture beginning in the Bronze Age, the development of fortresses and urban planning during the Iron Age, the construction of monumental palaces and temples in the Classical (Antique) period, and the emergence of religious and public buildings during the Medieval period. Using archaeological monuments such as Topraq-Qala, Koy-Krylgan-Qala, and Ayaz-Qala as case studies, the article highlights the integration of local architectural traditions with external cultural influences. It argues that the architectural heritage of ancient Khwarazm played a significant role not only in the historical and cultural development of the region but also in the formation of the architectural traditions of Central Asia as a whole.

Keywords Topraq-Qala, Koy-Krylgan-Qala, Ayaz-Qala, Aral Sea, Sultan Uvays Mountains, Shurkol, Govik, Abul, Mizon, Akchakhan-Kala (Oqchaxon), Sarykamysh, Amirabad Culture, S. P. Tolstov, *Ancient Khwarazm*.

Introduction Although Khwarazmian architecture has been extensively studied within the context of medieval Central Asian architecture, its much earlier origins and significant role in the architectural history of the region have received comparatively less attention. Khwarazm, located in the Amu Darya Delta within the Turan Lowland of Central Asia, is one of the oldest historical and cultural regions of the area. The name "Khwarazm" first appears in the Avesta, where the ancient lands of Iran and Turan are described together with their rich natural and geographical features. According to the writings of Abu Rayhan al-Biruni, the Karakum and Kyzylkum deserts were once covered by an ancient inland sea. Over thousands of years, geological processes and climatic changes caused these waters to retreat westward, leading first to the formation of the Caspian Sea and later the Aral Sea. During that period, the Aral Sea extended as far as the Sultan Uvays Mountains (the Tuyamuyun Gorge) and reached the regions of the Northern Karakum and the Ustyurt Plateau. Approximately 150,000–170,000 years ago, the present-day Khwarazm oasis consisted of a vast system of lakes, including Shurkol, Govik, Abul, Mizon, Akchakhan, Sarykamysh, and many others. The Aral Sea itself is believed to have originated as a result of tectonic subsidence and geological movements. The enormous scale of construction activity in ancient Khwarazm required substantial financial resources and labor, which could only be mobilized by a highly organized state possessing a strong administrative system. More than any other form of art, architecture depended on political, economic, and social conditions. These factors contributed to the emergence of a distinctive architectural tradition in Central Asia. Its characteristic features were shaped by the remarkable diversity of the region's natural and climatic

zones, which fostered the coexistence of nomadic, semi-nomadic, and agricultural communities with varying economic systems and levels of productivity. During this period, social stratification gradually intensified, leading to the emergence of distinct social classes. The remains of numerous ancient cities and fortresses, extensive irrigation canals, vast cultivated fields, and the wide range of archaeological artifacts discovered throughout Khwarazm demonstrate the remarkable achievements of its architectural tradition. These monumental construction projects were not solely the work of free farmers and craftsmen but were largely made possible through the labor of enslaved populations under the authority of a powerful ruling elite. Consequently, it may be argued that without the institution of slave-based societies, many of the monumental architectural masterpieces of the ancient world—including the fortresses and palaces of ancient Khwarazm—would not have been constructed.

Literature Review Khwarazm was one of the most ancient regions of Central Asia, centered along the banks of the Amu Darya. It was home to an early state characterized by highly developed irrigated agriculture, handicrafts, and long-distance trade. The Great Silk Road passed through Khwarazm, making the region an important center of economic and cultural exchange. By the end of the third century CE, the capital of Khwarazm was the city of Kath, while in the late tenth century the political center was transferred to Urgench (present-day Kunya Urgench). In antiquity, the territory of Khwarazm extended from the lower reaches of the Amu Darya southward to the upper courses of the Murghab and Tejen rivers. For this reason, historians distinguish between Ancient Khwarazm and Greater Khwarazm. Early references to Khwarazm are found in the Avesta, the Behistun Inscription of Darius I, the works of ancient Greek authors such as Hecataeus, Herodotus, and Strabo, as well as in the writings of early medieval Arab geographers. In his work The Chronology of Ancient Nations (*Al-Athar al-Baqiyah 'an al-Qurun al-Khaliyah*), Abu Rayhan al-Biruni wrote that the Khwarazmians began their chronology from the time when people first settled in Khwarazm, which, according to his calculations, occurred 980 years before the campaign of Alexander the Great. Later, they adopted another chronological system beginning with the arrival of Siyavush ibn Kay Kavus in Khwarazm and the reign of Kay Khusraw and his descendants. According to al-Biruni, this event took place 92 years after the first settlement of Khwarazm. These accounts suggest that Turkic tribes had inhabited the region and possessed organized forms of statehood for nearly three millennia. Archaeological evidence also confirms the antiquity of Khwarazmian civilization. The Amirabad Culture, dating to the beginning of the first millennium BCE, the extensive irrigation system of the lower Amu Darya basin, and the earliest fortified urban settlements—such as Qalaliqir, Kuzaliqir, and Janbas-Qala—represent important indicators of early state formation in the Khwarazm oasis. Herodotus reported that more than 360 artificial irrigation canals had been constructed along the course of the Oxus (Amu Darya), illustrating the remarkable engineering achievements of the region.

The distinguished Russian archaeologist S. P. Tolstov, in his seminal work *Ancient Khwarazm*, divided the history of ancient Khwarazm into four major cultural periods:

1. The Walled Urban Settlement (Shahristan) Culture (6th–4th centuries BCE);
2. The Kangju (Kang) Culture (4th century BCE – 1st century CE);
3. The Kushan Culture (2nd–3rd centuries CE);
4. The Kushan–Afrighid Transitional Culture (3rd–5th centuries CE).

Archaeological investigations have identified more than 250 ancient settlements on the right bank of the Amu Darya and approximately 60 settlements on its left bank dating to these periods. Among the most important archaeological sites are Qanqa-Qala, Qosh-Qala, Topraq-Qala, Jingilja,

and Toshkhirman, all of which illustrate the advanced level of urban planning and defensive architecture in ancient Khwarazm. According to Herodotus, Khwarazm, together with Parthia, Sogdiana, and Aria, formed the sixteenth satrapy of the Achaemenid Empire, paying an annual tribute of 300 talents to Darius I. He also records that Khwarazmian troops participated in Xerxes I's campaign against Greece. The exact sciences developed at an early stage in Khwarazm and found broad practical application. Ancient Khwarazmian engineers successfully employed sophisticated geometric methods in the construction of large-scale irrigation systems and monumental fortifications, achieving remarkable engineering accomplishments for their time. The great Khwarazmian scholar Abu Rayhan al-Biruni aptly described Khwarazm as "the gift of the Amu Darya," emphasizing the decisive role of the river in the region's historical development and prosperity. Al-Biruni also noted that the Amu Darya had once flowed near the Balkh Mountains before emptying into the Caspian Sea, and that more than 300 cities and settlements had existed along its former course. He supported this statement by referring to the works of Ptolemy. The remains of many of these settlements have survived to the present day.

Historical evidence indicates that, in ancient times, urban planning projects were first prepared by groups of architects and engineers and then presented for discussion at the royal court before construction commenced. Although modern building materials and construction techniques differ from those used in ancient Khwarazm, certain architectural traditions have continued through the centuries. In recent periods, fired bricks have become the principal building material in residential architecture and in the restoration and construction of fortifications.

Throughout history, the people of Khwarazm were compelled to adapt to the constantly changing course of the Amu Darya. Large groups of the population repeatedly migrated together with the river, establishing new settlements along its newly formed channels. Al-Biruni's observations were later confirmed by the archaeological expeditions led by S. P. Tolstov and Ya. Ghulamov during the twentieth century. Their investigations suggest that ancient Khwarazm was situated farther to the southwest than the later medieval oasis. Written sources indicate that during the seventh–sixth centuries BCE, the territory of Khwarazm extended considerably farther south, possibly reaching the vicinity of Herat.

As the river repeatedly changed its course, it became necessary to construct dams, hydraulic structures, and extensive irrigation canals. These developments significantly accelerated agricultural production and encouraged the concentration of population along riverbanks and irrigation networks. Consequently, the process of urbanization intensified. During the fourth–third centuries BCE, several major fortified cities were established, including Janbas-Qala, Bazar-Qala, Koy-Krylgan-Qala, and Topraq-Qala. Urban development continued in subsequent centuries, and both the right and left banks of the Amu Darya remained densely inhabited until the Arab conquest in the eighth century CE.

The establishment of the Great Silk Road also transformed the northern steppe routes, increasing their strategic and economic importance. Periodic climatic warming in Central Asia during the second and third centuries CE significantly altered the ecological conditions of the northern regions. These environmental changes affected vegetation, pastoral economies, and the traditional way of life of nomadic communities, resulting in large-scale migrations. Some groups moved toward the forests of Siberia, others migrated to China, while others settled in Sogdiana and the Amu Darya and Syr Darya basins.

The history of the ancient cities of the Khwarazm oasis is of particular archaeological and historical significance. The oasis occupies a strategic position in the center of the Turan Lowland, between the Karakum and Kyzylkum deserts, in the lower course of the Amu Darya, and was

formed by the river's alluvial deposits. Today, the historical Khwarazm oasis includes the present-day Khorezm Region of Uzbekistan, Dashoguz Region of Turkmenistan, and the districts of Amu Darya, Beruni, Turtkul, Ellikkala, and Khojayli in the Republic of Karakalpakstan, covering an area of approximately 69,400 km².

Archaeological evidence indicates that the architectural traditions of Khwarazm began to emerge as early as the second millennium BCE. The earliest residential buildings were constructed primarily from mud bricks and wood. These dwellings were generally rectangular in plan and consisted of several small rooms. As irrigation systems developed, defensive walls and fortifications also appeared.

During the Iron Age (9th–6th centuries BCE), urban planning became more sophisticated with the construction of massive defensive walls, towers, and fortresses. Administrative buildings and royal palaces began to dominate the urban centers, while distinctive temple-fortress complexes emerged as a characteristic feature of Khwarazmian architecture.

Following the campaigns of Alexander the Great, Khwarazm came under the influence of Hellenistic architecture; however, local architectural traditions remained dominant. Monumental buildings, royal palaces, and defensive fortifications were further refined, and architectural forms became increasingly complex, incorporating domes, monumental portals, and multi-room layouts.

With the spread of Islam, new architectural forms—including mosques, madrasas, mausoleums, and minarets—became integral components of the urban landscape. Khwarazmian architecture subsequently gained recognition for its refined decorative arts, sophisticated brickwork, and monumental structural compositions. The architectural heritage of ancient Khwarazm later exerted a profound influence on the formation and development of the broader architectural tradition of Central Asia.

Conclusion In conclusion, the architecture of ancient Khwarazm was shaped through a long historical process and developed in close connection with the region's social, political, economic, and cultural evolution. Beginning with the construction of early residential dwellings and defensive structures, Khwarazmian architectural traditions gradually evolved into monumental fortresses, royal palaces, temples, and other large-scale public buildings. Archaeological monuments such as Topraq-Qala, Koy-Krylgan-Qala, and Ayaz-Qala vividly illustrate the distinctive architectural traditions of ancient Khwarazm.

The most characteristic features of Khwarazmian architecture include the extensive use of locally available building materials, the predominance of defensive architectural forms, and the harmonious integration of structural design with artistic and decorative elements. Owing to these distinctive characteristics, the architectural heritage of ancient Khwarazm occupies an important place not only in the history of Central Asian architecture but also within the broader context of the world's architectural heritage. It continues to serve as an invaluable source for archaeological, historical, and architectural research.

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