

# Types of Space Arrangement of Memorial Buildings of Kazakhstan (I Millennium BC – the Early 20<sup>th</sup> Century)

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**Abstract** The researches of traditional architecture of Kazakhstan (existed till the early 20th century) were limited by territorial frames of separate oblasts of Kazakhstan. So, there were problems in the development of compelling concept of traditional architecture of Kazakhstan. Some studies applied holistic approach to its scrutiny. They determined certain periods but considered the evolution of local architecture as linear and successive. This is explained by the lack of database to develop objective conclusions. Due to local archeological and architectural researches, implemented recently, we can study deeper the process of architectural form-development in Kazakhstan. The aim of this research is the scientific justification of conclusions that the process of local architectural form-development had three main periods. They are – Ancient (Bronze epoch, Sacks period), Medieval (Turkic peoples mostly) and the period of XVI – early 20th century, which is related to forming of the Kazakh nationality. All the above periods experienced relatively independent architectural form-development. The methodological basis of the research is the comparative method, which pointed out the whole and specific in architectural compositions of all three periods. Also, due to following apply of the systematic analysis, we developed multilevel system of architectural forms. Moreover, the character of levels' interrelations has been determined. It was identified - each period had its own specific form arrangement. The ancient period had dominating form-development principle - rigid radial-circular structure of compositions. During the

medieval centuries – composition was arranged as per clearly and artistically accented three-level volumetric-spatial structure. The “Kazakh” period – the space was arranged as per dominating the vertical axis. This research tried to form a panoramic vision on the development of traditional architecture of Kazakhstan during the period of three thousand years. It will be a significant contribution to the awareness of the processes of architectural form-development in Kazakhstan. It will be the basis for further researches to study and specify certain aspects of local architecture. The results of the research can be used for scrutiny of architectural heritage, development of new approaches for its restoration and protection. The research is absolutely necessary for the creation of modern regional architecture of Kazakhstan.

**Keywords** Memorial Architecture of Kazakhstan, Kurgan, Mausoleum, Radial-circular Structure, "Centricity", Three-level Structure, Vertical Axis, Dome, Portal-domed Mausoleum, Composition

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## 1. Introduction

The specific of architectural form-development is the most evident in the memorial architecture, because memorial buildings are less affected by the utilitarian impacts than the civil ones. We can point out three basic cultural stages in the region where Kazakhstan is assigned

to:

- ancient ("Saks"), is related to the Irani-language inhabitants of Eurasia and derives from the Bronze Epoch;
- medieval, created mainly by the Turkic-speaking peoples, its stylistics is developed under the prevailing influence of Islamic architecture, though it has "assumed" some local (pre-Islamic) features;
- late medieval is correlated with the constitution of the Kazakh ethnos. It lasted till the early 20<sup>th</sup> century, and absorbed both the previous traditions and the newly appeared innovations. It has also provided a special impact on the fund of the regional process of architectural form-development.

Determination of the principles of form-development of the memorial architecture of the ancient, medieval and late-medieval periods is of high importance to achieve compelling awareness of the evolution of the architecture of Kazakhstan and to address the problems of its study. Moreover, it is necessary to protect architectural monuments and also to apply the achievements of traditional principles of form-development on the modern architectural process. Each stage specified above, is complicated and dynamic, and has its own certain compositional and stylistic features. The authors of this paper, having scrutinized the ancient, medieval and late-medieval memorial architecture of Kazakhstan, study the specified problems representing the core points within the whole process of regional architecture development. The authors have studied the objects of research in terms of comparing them. They have also defined the compositional features of architectural monuments of the regional architecture.

## 2. Background

The monuments of the ancient period (I millennium BC – beginning the I millennium AC), are correlated on the whole with the Saks culture, which derives from the Bronze Epoch. They differ greatly from those of the medieval (9<sup>th</sup> – 15<sup>th</sup> centuries) and late-medieval (Kazakh, 16<sup>th</sup> -early 20<sup>th</sup> century) periods. Though the latter periods shouldn't be considered as consequently related to each other and comprised the whole (besides some mausoleums of the South Kazakhstan), the monuments of these periods are much closer to each other as per their principles of form-development as compared to the first - the most ancient period. Nevertheless, some Kazakh mausoleums, which have relict features, are correlated with the monuments of the Saks cycle. Moreover, the composition of some Islamic monuments of Central Asia and Kazakhstan was more under the influence of the pre-Islamic structures - Zoroastrian temples of the fire "chortaks" or even Buddhist sanctuaries [1] than by the gorgeous tombs of the late Bronze Epoch or the Saks mausoleums.

## 3. Methodology

Both methods of comparative and system analyses (some elements of it) have been applied as per this research. The methods have let us consider the evolution of mausoleums as the unified system in all the varieties and aspects of their correlations and relationships.

## 4. Theory

As it has been identified by the authors, the sequence of the memorial architecture form-development starting from the ancient times till the medieval period is as follows: initially the development of simple geometric figures (circle, square) set up on the horizontal plane which is arranged as per the radial-circular scheme. Then, later on as soon as the figures are learnt by the end of the ancient period, the volume of monuments is finally developed. Moreover, even some elements of form artistry emerge (vertical segmentation). Further on, during the medieval centuries the structuring of the mausoleum volume at the more complicated level is achieved – the composition is arranged on the basis of combining of geometric volumes along its vertical axis and as the result, they are related to each other as per both the general composition and construction of the building. Later on, the domination of the vertical axis, typical for the majority of Kazakh mausoleums, impacted the development of their specific space arrangement – dedicated concentration on the crowning part of them (the dome).

## 5. Types of Space Arrangement of the Memorials of the Three Main Periods

The part is dedicated to the structural specifics of the space arrangement of the memorials. It is also devoted to the identifying of characteristic features of each of them. The forms of monuments and the types of their space arrangement reveal the unique piece of culture which is reproduced sub-consciously via morphology of the buildings. It identifies various symbolism of forms – "the meaning of architectural forms is exactly their symbolic importance".

### 5.1. Radial-circular Structure – the Dominating Form-Development Principle of the Composition of Ancient (Saks) Tombs

The variety of the arrangements of kurgans and the earliest mausoleums confirms the fact, that they were not erected as the result of launching of some holistic ideological "programs". It was rather a "mosaic item", which was combined from the pieces of diverse cultural layers. Nevertheless, their basis reveals invariant,

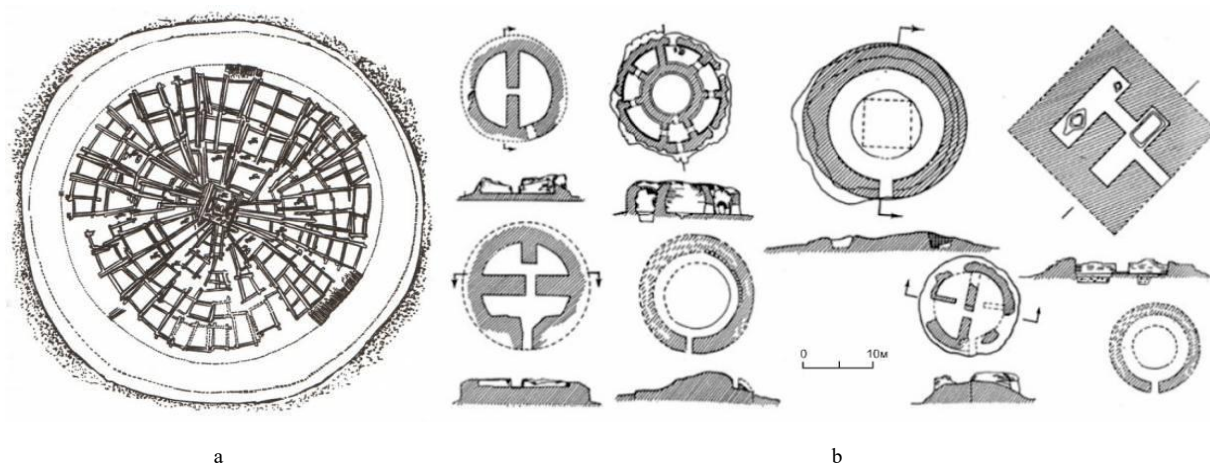
structuring “core” which derives from the previous Bronze Epoch. Such “core” element was - the stone circle or concentric circles set up on the basement and small mound above the burial chamber that were hidden within the “body” of the kurgan. It was handled by the embankment made of stones or soil with stones. Thus, this structure marked the center (burial chamber) and the periphery (the outside circle was reproduced by the crepidoma, or stone siding, or shallow ditch) of the kurgans in terms of their horizontal plane. Therefore, the vertical axis (Figure 1) of the construction “permeates” the center of the kurgan with its lowest (burial) and upper points (the finial of the kurgan or small platform on the top). During the late Bronze Epoch and the early Sacks period there were some kurgans where the burial chambers were arranged on the ground (e.g. Arjan, Tagisken mausoleums). But due to the vertical axis of the centric structures it was unavoidable that the space around the vertical directions would have been developed, which exactly occurred. During the Scythian times (6<sup>th</sup> – 4<sup>th</sup> centuries BC) the trend to deepen the burial chamber and to increase the height of the embankment takes place [2]. Even in case the burial chamber wasn’t deepened (Besshatyr, Shilikty kurgans) the “body” of the kurgan was intensively developed as per its vertical axis. That was expressed by huge embankments (sometimes – gigantic). Similar processes happened with ancient mausoleums, and the walls of them were erected up directly from the ground (similar to the sliding formwork technology).

#### 5.1.1. Radial-circular Structure – Characteristic of the Layout Planning of Ancient Funerary Structures

Nevertheless, the basic form-development principle – strict radial-circular scheme, has made the centricity (concentricity) of the forms of kurgans and mausoleums, and the long lasting order of them. It was typologically

universal principle for the ancient times. That is why common principles of the space arrangement are evident as related to such far distant ancient centric constructions (tholoses, tumuluses, stupa, dambas etc.). In this case one can see not only common ancient views of people but rather the specific rules of the form-development process which are typical for the centric forms. Moreover, such rules of form-development are characteristic of the architectural form as an independent category. It has its own “coordinate system” and “force lines” and what invisibly “permeates” the form. Exactly along these invisible lines (actually the system of the axes) the process of form-development was established.

Considering the available database, we point out that the centric compositions have been arranged with the help of concentric elements – diverse as per their dimensions but resembling each other, they have the common center. Such concentricity of their layouts is especially typical for the cult memorial constructions of the Bronze Epoch and the times of the Sacks. Such composition of constructions is known as related to mausoleums of the Begazy-dandybai culture (central Kazakhstan). The circle corridors were included into the layouts of the mausoleums of the North Tagisken, the so called “crossings” of the East part of the Aral-sea region; the mausoleum “Balandy-2” (4<sup>th</sup> – 2<sup>nd</sup> centuries BC) (Figure 2) which is the crowning point of the development of the mausoleums of such type. As regards to kurgans, the centricity is represented by the stone circles, arranged as the basement of the embankment (sometimes they are doubled), the circles of sanctuaries, diverse crepidoma, etc. All the above should be treated as the expression of the unified principle of the concentricity – “doubling”, “tripling” of similar elements along the vertical axis. That was rhythmical repeating of the initial basis as the implementation of the rules of the composition development - typical for the ancient times.



**Figure 1.** a) Kurgan Arjan (VIII-VII centuries BC) located in Tyva Republic, RF, (plan as per M.P. Gryaznov). Source: <http://iratta.com/materials/skify/15803-kurgan-arzhan.html>. b) Plans of the mausoleums of the I millennium BC, East part of the Aral sea region, Kazakhstan. Source: <https://arheologija.ru/pamyatniki-sakov-priaralya>



**Figure 2.** Mausoleum Balandy-2. a) Plan and the section of the construction. Source: <http://bse.sci-lib.com/particle021379.html>; b) General view. Source: photo of A.B. Ordabayev.

The arrangement of the “kurgan’s body” within them were their embankments. The above principle was expressed through the sequence of layers’ arrangement, which constituted the embankment. It is so evident considering the kurgans of Besshatyr. Not so vividly but also we can see the same principle, regarding the embankments of the Bashadar kurgans – rock placement is over the earthen “body”, or of the Berel kurgans – stone or pebble layer cover of the earthen hill. Moreover, the “multilayer structure” of the kurgan construction is expressed more veiled. The buried body was put inside the trough which was put in turn inside the log house then into the outside one and then - into the burial chamber. Then it was covered by the layers of the embankment. All those layers were the ones that “wrapped” the buried body (as per the principle of the “concentric shells” of the “matrioshka type”. On the whole, that is exactly the principle of the concentricity, i.e. the space is rhythmically arranged around the semantic center (in this case – around the burial).

The expression of the “centricity”, regardless how complicated it looks due to the concentricity (if any), includes the categories of the center and the periphery. This principle is one of the basic ones for the development of such composition. Because it sets up concentric “lines of force” (circle “axes”), in line with which the process of form-development is established. But on the whole, the centricity principle (no matter how complicated its concentricity is) is the hindering factor in terms of the evolution of the composition development in other directions (Figure 3).

If this principle hadn’t been broken, then kurgans would have endlessly complicated its inside structure. But it would have been as per the amount of layers (concentric walls, layers, stepped embankment), or developed multiple near kurgan constructions (diverse variants of crepidoma, the sanctuaries around the kurgan etc.) similar to the

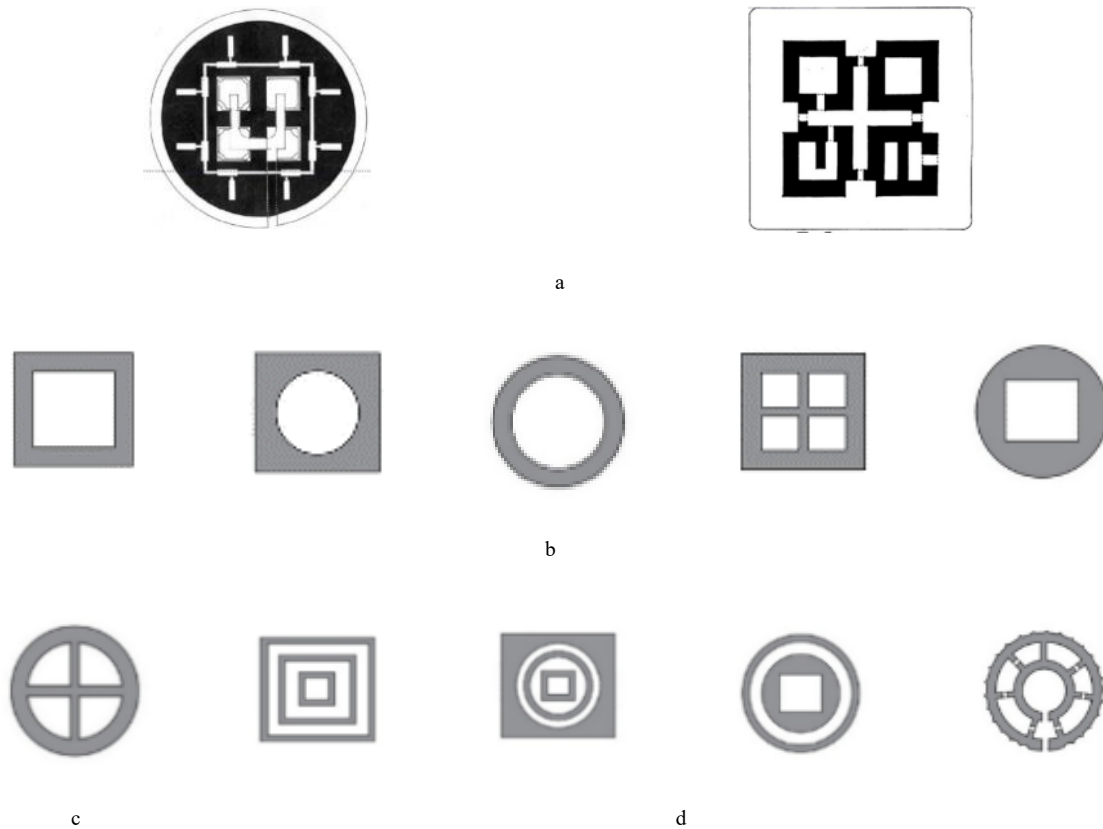
“circles on the water”. In any case, all the varieties of the forms would have been “one-dimensional” and would have had the simple scheme expressed by the concentric circles (if even in the three-dimensional variant as it is clear with regards to the Besshatyr kurgans) (Figure 4).

Nevertheless, any centric figure, especially the round one, holds multiple radial axes which also direct the form-development, similar to the lines of force of crystal growth. Such impact might have been expressed via radial walls (“crossings”, radial inner walls and scapula installed on the facades of mausoleum Balandy-2). In this context we should point out the regularity, identified by M.P. Chernopitsky – around big kurgans of Central Asia there sometimes were installed dozens and hundreds of constructions which were arranged in such a way that reproduced concentric circles (e.g. the kurgan located on the way to Turan in Tuva, database is taken from the personal archive of M.P. Gryaznov). Each construction represents two elements of two chains simultaneously – radial and cyclic ones [3]. The elements, located around the kurgan are not related to the concentricity only but to the radially as well, even if they are set up as per one chain. The tholoses of Asia Minor (6<sup>th</sup> century BC), which resemble the Sacks kurgans, have the construction system in the kind of concentric and radial walls and the filled-in chambers that occurred between them. Such radial-circle constructions exist first of all due to their functionality. They are reasonable as per their structures as they follow the basic principles of the space arrangement of the centric form which has round layout. We suggest even, that the implementation of this universal principle leads to the ability to combine all the accompanying aspects of the building process (constructional, compositional and even ideological).

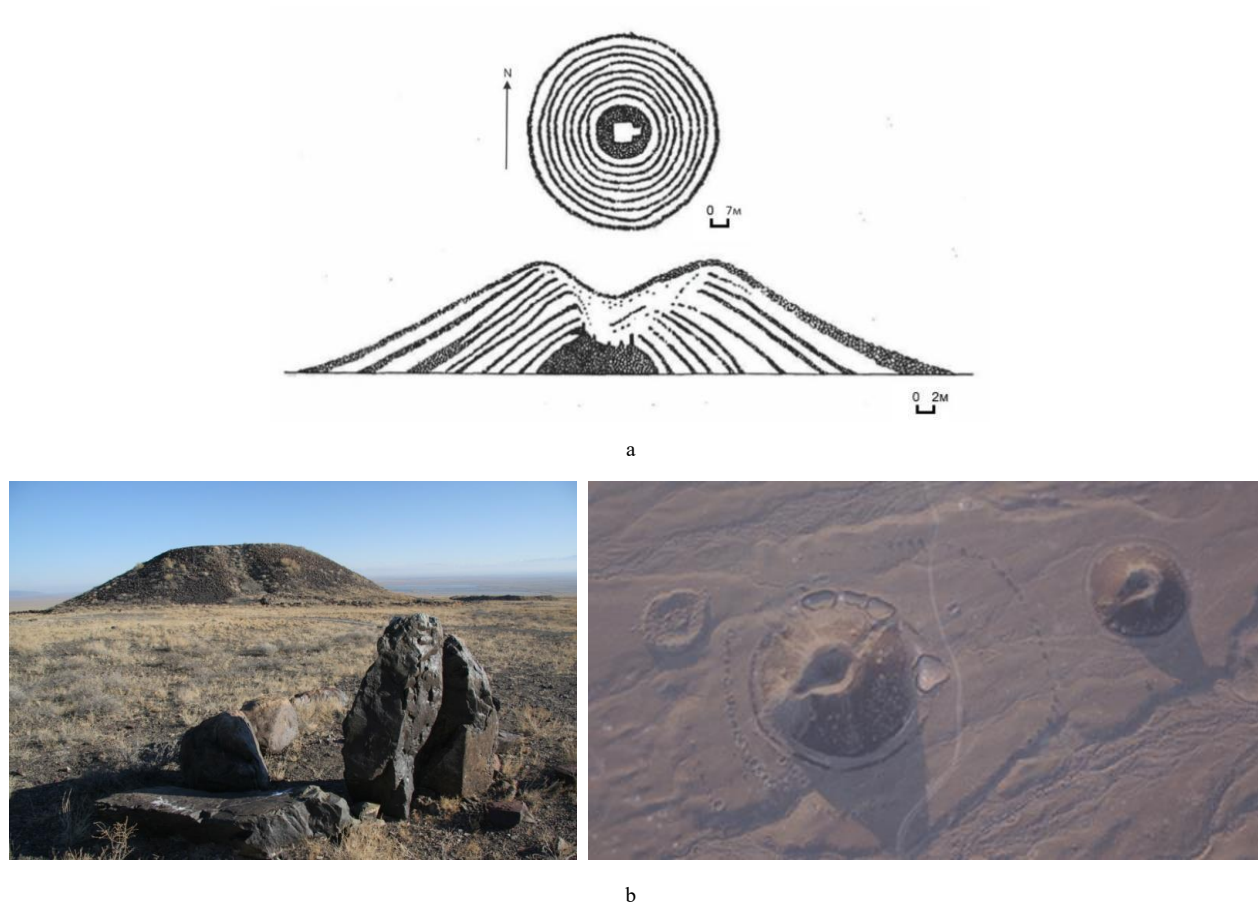
Considering the scheme of the space arrangement of the

Sacks tombs, we identify that one of its core principle was the centrality. As per the iconic pattern – it is the equality of all the (radial) axes of the horizontal plane at the existence of one vertical axis (Figure 5). As it was specified above, the concentric combination of the circle and the quarter in diverse variants was the characteristic feature of the layouts of funerary constructions of the late

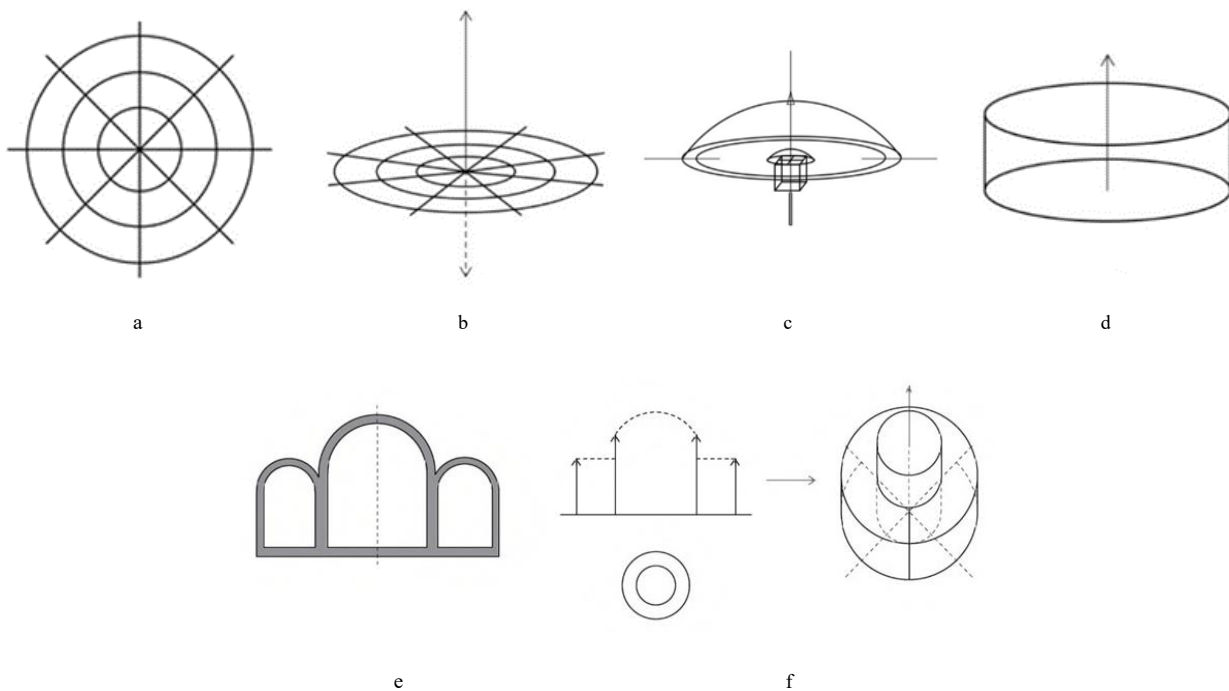
Bronze Epoch and Sacks times. Such layouts planning scheme directly identifies the principle of combination of the centrality and radially. This basic principle was applied to the erection of kurgans and mausoleums of the Sacks times and existed even much longer. This principle was typical for the type of space arrangement of ancient funeral constructions.



**Figure 3.** a) Mausoleums of the “Chirikrabat culture”. Plans of Chirikrabat and Babish-mulla mausoleums (without scale drawing). Source: <https://arheologija.ru/pamyatniki-sakov-priaralya/>; b, c): simple layouts of the ancient mausoleums that were implemented as per the principle of centrality; d) expression of the principle of concentricity applied to the plans of mausoleums of the Archaic Period. Source: the authors of the paper



**Figure 4.** a) The Third Besshatyr kurgan, the layout and plan (implemented by stone layings). Source: K.A. Akishev, G.A. Kushayev, 1963; b) general view of the Third Besshatyr kurgan and the altar near it. Source: Photo by E.M. Baitenov, A.E. Baitenov



**Figure 5.** The scheme of the space arrangement of the constructions during the ancient period: a, b – the equality of the radial axes set up on the horizontal plane; c, d – the vertical axis of the centric type of the space arrangement; e – arrangement of the components of the composition (central volume, chambers surrounding it) on the horizontal plane (concentric type); f – development of the simple volume by the “direct stretching” from the plan of the construction. Source: the authors of the paper

### 5.1.2. Deviations in the Radial-circular Structures in the Process of the Longitudinal Axis Development

However, this scheme didn't stay so "strict" as related to the Scythian-Sacks culture – in some cases it was modified to some extent. The corridors-dromos were characteristic for the number of kurgans of the Sacks times (Shilikty, Besshatyr kurgans) and fenced with the "gates" in the kind of vertically installed stones, which represented somehow the longitudinal axis. But even in the locations where they are not typical (e.g. Gorny-Altai kurgans) the strictness of the radial-circular scheme was partly "broken" by the near kurgan layings in the kind of "funeral paths", or variety of platforms, or altars, or chains of Bal-Bal installed on their east side etc. However, despite the "enforcement" of the longitudinal axis, the basis of the centric space arrangement itself (which was supported by the main centric elements – round layout of the kurgan embankment and the square burial pit which were united by the vertical axis) - was the integral part of the kurgan related culture during all the period of its existence, though it was sometimes "shaken".

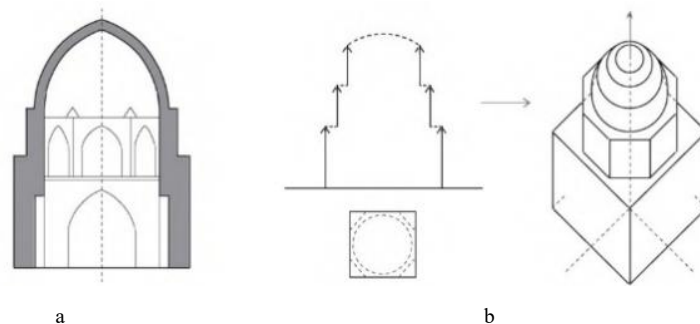
But even within the ancient civilizations when the centric forms were prevailing, the depth-spatial temples were developed (e.g. - the architecture of the ancient Egypt). They had longitudinal axis composition which emerged within the centric forms. The longitudinal axis determination had to appear due to the necessity to arrange the main entrance to the medieval mausoleums in Kazakhstan and Central Asia. But even in this case, the move away from the basic centric composition of them was not intensive. It was developed in line with the local pre-Islamic constructions since the 10<sup>th</sup> – 11<sup>th</sup> centuries by the introduction of the portal structures and was finally formed by the 14<sup>th</sup> – 15<sup>th</sup> centuries as the result of emerging of multi-chamber mausoleums. With regards to the Kazakh mausoleums, the above process took place again in the second part of the 19<sup>th</sup> – the early 20<sup>th</sup> centuries. The centric composition, developed in the ancient times, which reproduced the initial phase of the architectural development of the space, kept existing as a mark for far long times more.

The centric compositions kept being dominated within the cult-memorial architecture for long times. The architectural "mentality" couldn't completely "give up" them to develop different compositions in terms of façade arrangements, or especially asymmetric structures. That happened finally during the industrial epoch only.

### 5.2. Three-part Composition Structure (the Main Volume – Dome Drum – Dome) - as the Characteristic Feature of Medieval Mausoleums

The idea of Harmony was prevailing in line with the world views of peoples of the Middle East. It is explained by their advanced knowledge of mathematics. As M.S. Bulatov [4] specified, during the Islamic period unlike the sculpture-plastic forms of pre-Arab architecture, there were developed rational structures based on geometric construction. "The geometry of Euclid which is abstract as per its essence, assumes material implementation via the construction of architectural-tectonic structures and architectural ornament as well" [4]. Brightly exposed geometry of the forms and also smart and logically reasonable system of their combination with each other were achieved due to the advancement of sciences (geometry). So, any craft activity of people, the "art of building" included, appeared to be the derivatives of sciences development [5]. Thus, the medieval architecture, as compared with the previous one of the Sacks phase and of the following late-medieval one (i.e. of the Kazakh period) appeared to be the most harmonized and balanced in terms of their architectural composition.

In line with the above, the logics of the architecture evolution achieved the three-part composition of the medieval mausoleums (Figure 6). It was implemented with the help of its fundamental elements – the main volume, dome drum, dome. This sequence of geometric forms, set up on each other, fostered to relieve the visual image of the composition by the narrowing it towards the top. The combination of clearly perceived correct forms produces clearly expressed movement [6,7].



**Figure 6.** Three-part composition of medieval mausoleums. Source: drawing of E.M. Baitenov: a) clear tier partitioning in the kind of setting up of the storeys on each other; combination of the composition components along the vertical axis (stepped silhouette); b) successive smoothing of those partitioning in their plans: the basement – square, under dome drum – polygon, dome – circle; development of the volume that changes qualitatively as per its vertical axis. Source: the authors of the paper

On the whole, the massive main volume or the basement of the mausoleum had square plan, the dome drum that had octagonal plan and what was the “intermediary” between the basement and the dome. The dome was the crowing and the most “lightweight” element of the composition and had round plan accordingly. All the specified components created together a stepped silhouette of the building. But it was more than just construction development - the form transformation from the square basement into the circle of the dome.

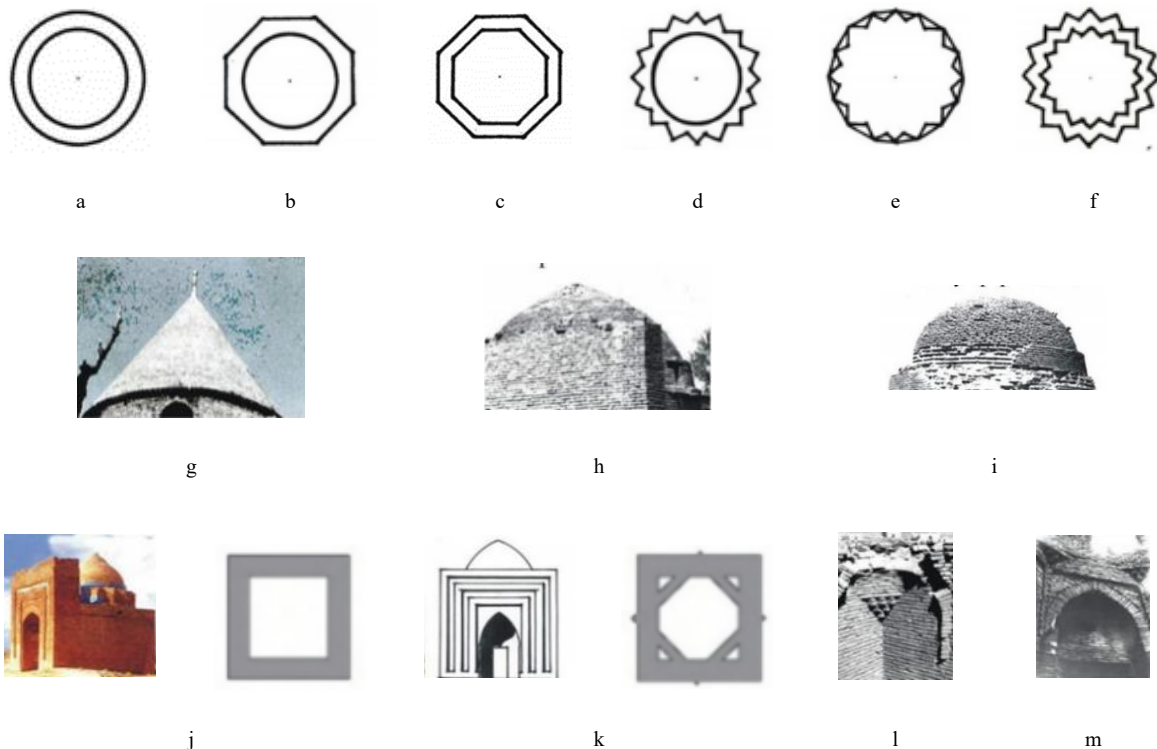
### 5.2.1. Two-part Composition Structure of Early Mausoleums: Basic Volume - Dome

Nevertheless, the evolution of medieval mausoleums was a quite complicated process. The implementation of form-development principles inherent of them took place stage-by-stage. Moreover, the first mausoleums of Central Asia had frequently two-part composition (the basement-dome) and the tier of dome pendentives could be “hidden” behind the gallery (e.g. the mausoleum of the Samanids in Bukhara, Abu-Sayed in Mean, mausoleum in Serakhs [6,7]. The pendentives were inside the volume of some monuments (mausoleum Arabata in Tim, mausoleum Babaji Khatun near Taraz (east Kazakhstan). Some mausoleums could have them slightly expressed, similar to their prototypes – chortacks (mausoleum Abdulla ibn Bureida) [8]. Indistinctly expressed tiers of the dome pendentives

occur within the early medieval architecture of Central Asia and they have much in common with the construction schemes of pre-Islamic structures – chortacks (fire temples). Buddhist sanctuaries – two-part structures in the kind of the basement volume having square plan with the dome installed upon it [1]. Later on, the dome pendentives became an important element of the building’s interior composition. The dome drum “achieved” its fair status of the outside component of the mausoleum. Moreover, in the interior the dome drum assumed the shift of the tiers of dome pendentives to the basis of the dome (Figure 7).

It is necessary to point out that the dome drum is found among early Islamic structures, e.g. Kubbat-as-Sulabiya or the mosque Shir-Kabir. But in these cases, their composition is far from being harmonized – cavities of the corner pendentives of the drum “protrude” too much. The later schemes of similar constructions, which hide them, look better designed.

So, only after the volumetric-spatial structure of medieval mausoleums was finally developed, the interior of them, which reflected the compositional arrangement of the constructions of the buildings, became more “flexible” to changes as per their outside forms. It was exactly the interior that stimulated the form-development of mausoleums towards the correlation of the partitioning of their inside and outside spaces.



**Figure 7.** Layouts combinations of the dome and the under dome drum: a) circle-circle; b) circle-polygon; c) polygon-polygon; d) circle - star-shaped; e) star-shaped - circle; f) star-shaped - star-shaped. Source: the authors of the paper. Basic types of the dome forms: g) tent-shaped; h) spherical; i) spheric-cone shaped; Combinations of the chamber and the basement: j) square in the square; k) octagonal in the square; Pendentives of mausoleums: l) Bolgan-ana; m) Alasha-han. Source: photo of E.M. Baitenov

### 5.2.2. Three-part Composition Structure of Mausoleums (Basic Volume – under Dome Drum - Dome) – the Highest Achievement of the Volumetric-spatial Composition, Constructions and Décor

The idea of the composition design became achievable by means of geometric forms and the logics of their hierarchy. The artistic and constructional aspects were merged and they unified the outside and inside spaces. As the result the level of building masterpieces was achieved during the flourishing phase of the medieval architecture (13<sup>th</sup>–15<sup>th</sup> centuries) evolution. The logics of the composition of the mausoleum of the Samanids dynasty is gorgeous in all the aspects of its architectural and décor solutions. The gradual enlargement of the decorative niches that are arranged from the basement and up to the arcs of the gallery is logical. The composition has clearly relieved visual image towards the top. The idea is an abstract one but it is expressed the most clearly.

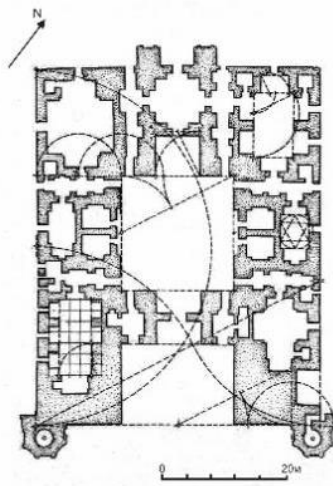
As L.Yu. Mankovskaya pointed out, philosophic mathematic treatises of scientists-encyclopedists of the 9<sup>th</sup>-15<sup>th</sup> centuries confirm the fundamental role of mathematics with regards to the architectural science [9]. M.S. Bulatov [10], having scrutinized the scientific heritage (analysis of geometrical harmonization of the monuments and ancient treatises), has proved the existence of the theory of the construction of architectural forms during the medieval period of the architecture of Central Asia (Figure 8). So, the medieval architecture of the region

of Central Asia and Kazakhstan was constantly affected by the highly advanced science. That was the activity which was forming separately from the architecture related spheres, but involving it into the general cultural development process.

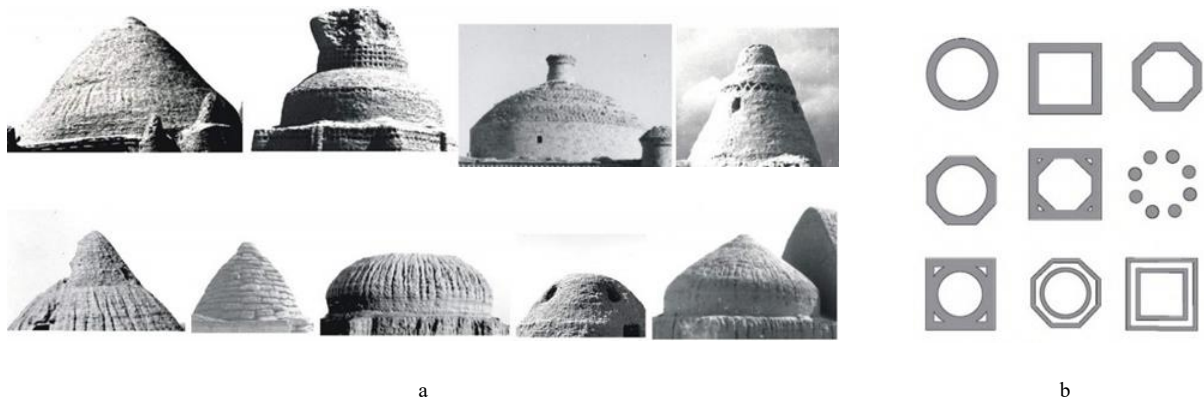
So, the principles of specific space arrangement of the monuments of Central Asia and Kazakhstan of the medieval period were expressed by the following: creation of the compact volume which was structured along the vertical axis. Also the artistic development of the space arrangement took place. Moreover, there was logically justified and construction considered hierarchy of the forms which constitute this volume. That was the way to implement the idea of the architectural composition in line with the standards of the medieval ages.

### 5.3. The Priority of the Vertical Axis within the Composition of the Kazakh Mausoleums

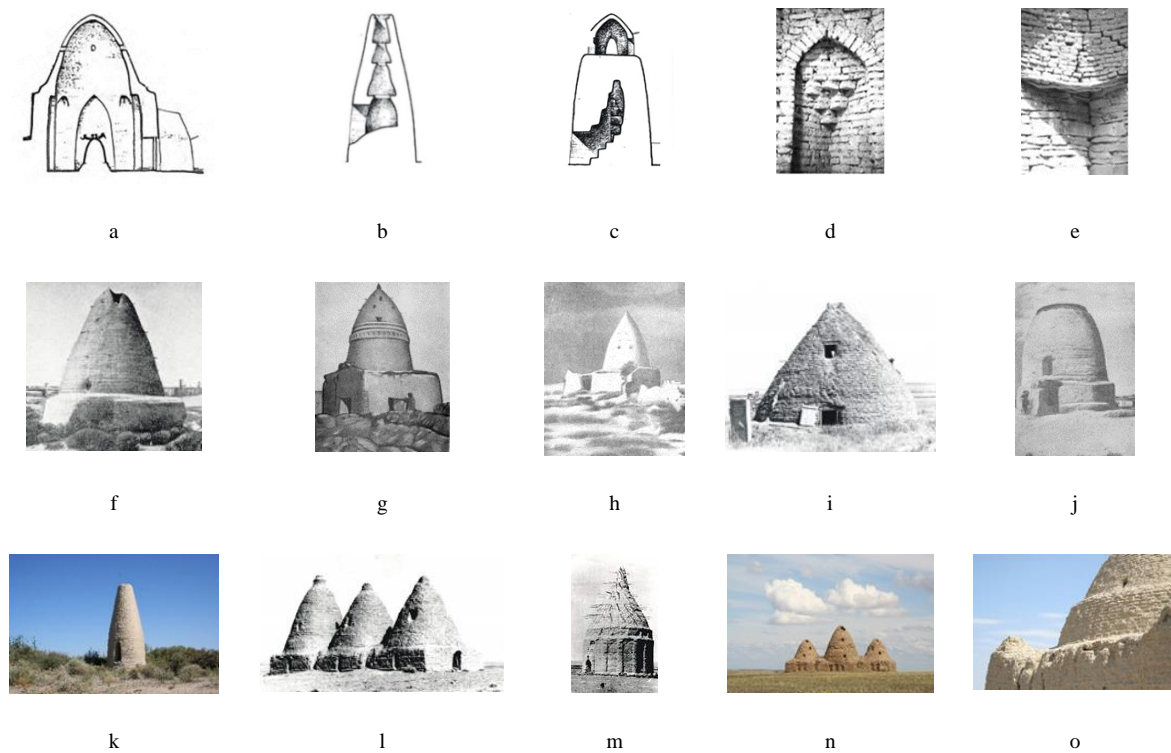
Considering the Kazakh architecture, we should specify that it is absolutely different in terms of their composition space arrangement, as compared with the one of the medieval periods. The composition of the Kazakh mausoleum has the initial priority of the dome (Figure 9). Even the name of the mausoleum in the Kazakh language – “kumbez”, “shoshak-beit” means the “dome”. The space that was arranged along the vertical axis has been the dominating principle of the space arrangement of Kazakh mausoleums (Figure 10).



**Figure 8.** Mausoleum of Khoja Ahmed Yassawi in Turkestan (Kazakhstan), the end of the XIV century. Source: plan, analysis of the space arrangement as per M.S. Bulatov, fragment photo of E.M. Baitenov)



**Figure 9.** a) silhouettes of domes. Source: photo of E.M. Baitenov; b) basic planning combinations of the chamber and the main volume (the latest two are concentric ones). Source: the authors of the paper



**Figure 10.** Kazakh period: a) Karabura mausoleum (section); b) tower of Kotybar (section); c) tower of Murzabayev (section). Mausoleum construction related devices which were applied to implement the shift of the square basement volume to the round dome: d) Kaukay mausoleum; e) Talmas-ata mausoleum; Kazakh mausoleums and towers, general view: f) Karmakchi-ata mausoleum; g) nameless mausoleum #1 in the Suzak village (Kazakhstan); h) nameless mausoleum #2 in the Suzak village; i) Baban mausoleum; j) Shik-Niyaz mausoleum; k) tower of Kotybar batyr; l) Sarysholak mausoleum; m) Baltabek-kazhi mausoleum; n) Sholtanay mausoleum o) Baki mausoleum. Source: photos and drawings – a, b, c, d, e; i, k, l, m, n, o – of E.M. Baitenov; photos – f, g, h; j – of G.G. Gerasimov

### 5.3.1. Dome is the Dominating Element of Kazakh Mausoleums

The cultural background for such kind of the mausoleums space arrangement was the worship of ancestors – “aruakhs” (in Kazakh), which was advanced within the nomadic environment. It has been existing since ancient times and even nowadays. It is connected with the sacral “upper world” adoration and reflects the “echoes” of pre-Islamic beliefs of Turkic peoples, such as the cult of the “Sky” (“Tengriism”). The idea of the “Sky” worship was the guiding spirit of the worldviews of the Kazakhs [11].

It is evident that such worldviews were correlated with the domination of the dome in general composition of the mausoleum. In any case, the vertical axis was the semantic one of the construction, around which the inner toponymical space was established. It was also connected with the worldviews of nomads Kazakhs on the post death existing of the soul and the feelings of the sacredness. Thus, even in the early 20<sup>th</sup> century there were widely spread worldviews that “...saints’ souls exist above their bodies in happy places and that they come to their coffins if to call for them. Also they think that during conducting of commemorations the souls of all the dead come to the earth from the stars where they inhabit...” [12]. Such semantic aspect was the inherent part of Kazakh memorial constructions. A vivid example of such worldviews is two chamber longitudinal – axial mausoleums that were erected on the lower reaches of the Sarysu river (Kazakhstan) [13]. They have the room for praying that is arranged on the top of the entrance chamber on the second level, then, the grave itself is located in the chamber established deep inside the mausoleum.

The burial chamber of these mausoleums is the dominant over the whole composition of them. It is much bigger in size than the first one that is arranged as both the entrance and the room for praying (ziarat-khana). Such space arrangement is of great interest if to take into account the mausoleums of Central Asia and South Kazakhstan. They have been developed under the influence of conservative traditions, so their praying chambers (ziarat-khana) exceed much in size the burial one. Thus, by this example one can clearly see the prevailing role of the Kazakh beliefs (related to the worship of ancestors) over the Islamic ones. As the result, the according dominating of the dome is built over the burial chamber and not over the praying one. As well as the domed structures, there were memorial fences “open to the Sky”, popular and widely spread “tort kulaks” or “sagana-tams”.

Specific towers - “munara” were also erected (Figure 10, k). They are the vertical embodiments of the commemorations that we have met only in the downstream of the Syr Darya river (Kazakhstan). We have also scrutinized them, of course. They are dated as of the 18<sup>th</sup> – the early 20<sup>th</sup> centuries. We specify that the bulk of the towers have the interior in the kind of some amount of arced levels that are connected with each other and so,

make it possible to get the top of the tower. Also they have thin twigs that are stuck in the outside walls of the tower “body” to create something like a symbolic stair.

Unlike their medieval prototypes, whose chambers can be enclosed, Kazakh “munara”- towers have mostly inside “trough empty” arched space unified into the whole one. It leads to the “Sky”, i.e. the vertical architectural solution of the inner space. Analyzing the space arrangement of “munara”- towers and the available ethnographic database, we have come to the conclusion that these monuments are the so-called “seats of the soul” which help the “souls” to get the “upper world” or “reach the earth” [14]. The “munara”- towers were usually erected on the plots adjacent to the mausoleums or “tort-kulaks”- memorial fences, built over the burial of the dead.

The domes of Kazakh mausoleums had mostly uncovered tops, i.e. the inside space of mausoleums was opened to the outside through the zenith hole of the dome. As the consequence of such “opened” domes, there emerged the constructions-intermediaries between domed mausoleums and fences. They had such laying of the bricks that resulted in some slight inside slope of the walls. But actually they were not the “unfinished” arched structures. However, the mausoleums that had closed tops where the spires were installed, also “justified” idea of dominating of the central vertical axis. Also, we point out, the interpretation of the basement of mentioned constructions. If to compare, the main volume of the medieval mausoleum dominates in terms of the mausoleum’s generalized image. But the bulk of Kazakh unique mausoleums have the according volumes which represent only the advanced basement or the bottom segment of the walls that have less brickwork overlap. Those constructions, whose lower part is actually the basis of the dome, have them dominating within their general composition.

Quite often there were almost the same wall slopes towards inside of the basement. The dome drum and the lower part of the drum fostered the “merging” of the basement and dome volumes into the unified one. That peculiarities are vividly expressed via the constructions erected by the use of raw bricks (e.g. mausoleum of Beki located in the downstream of the Sarysu river (Kazakhstan) and others). The principles of highlighting the “verticality” and the “generalization” of the volume have been most clearly implemented as per the constructions of raw bricks. Their laconic volumes couldn’t have clear facets due to the specifics of this building material unlike the ones of the burnt bricks.

### 5.3.2. The Influence of Constructions Peculiarities on the Highlighting of the Vertical Axis within the Composition of Kazakh Mausoleums

Some mausoleums also developed outside partitioning of their volumes to some extent. Their interiors space decoration was much less. It was almost without any finishing. There wasn’t any artistic interest to such an

important element as the dome pendentives - the shift from the square basement to the round basis of the dome. The same was even in patterns where the outside space of the volume of the mausoleum was advanced by combining of diverse volumetric components and the applied decoration as well. Usually the pendentives were implemented with the help of slightly crafted sticks set up over the corners of the bottom chamber. The under-dome octagonal is hardly possible to handle at this level of the construction and so, the under-dome tier wasn't exactly octagonal, as that of the medieval mausoleums and sometimes of Kazakh ones. The corners of the under-dome tier were rounded much (Figure 10, d, e). That is why, only at high altitude, at the level of the dome, due the bricks laying overlap the complete rounding of the walls was possible. The "rounding" of the dome plan often was achieved without any use of corner pendentives. It was handled by the gradual overlap of bricks laying starting actually from the floor of the basement chamber and so, the circle of the dome layout was achieved at high altitude. Such constructional method didn't include any horizontal partitioning and thus, the idea of striving up to the "Sky" was expressed more vividly.

Such constructional solutions appeared to be the reason to increase the height of the domes, which could somehow resemble even the tent-shaped ones. That also clearly illustrate the specifics of the Kazakh mentality – space arrangement in line with the core values of ancestors' worship, mentioned above. The mausoleum Karmakchi-ata erected in the downstream of the Syr-Daria river (Figure 10, f), almost all the late Medieval mausoleums of Suzak (South Kazakhstan) (Figure 10, g, h), plenty of mausoleums of East Kazakhstan (Figure 10, l, m, n) – they all together represent such kind of architectural solutions which were created in line with the traditional world-views of the Kazakhs. There was the widely spread trend that took place since the 19<sup>th</sup> century, especially during the second part of it. It was the theme of the "façade advance" which was - quite clearly expressed and "highlighted" main façade but underdeveloped portal composition at the same time. The trend appeared mostly as the imitation of the medieval portal mausoleums. But that was characteristic of the Kazakh mausoleums of the late part of the period only, when the trend to develop main façade emerged. The "façade advance" was actually expressed by more detailed crafting of the main façade. The main façade was either slightly higher than the other ones (slightly outlined parapet) or it was decorated more properly.

### 5.3.3. Entrance Portals is the Unoriginal Element of Kazakh Mausoleums

The fundamental principle of the vertical axis priority and as the result – the domination of the dome in their general composition, was the characteristic of the Kazakh mausoleums, which hindered the development of the portal forms. Dominating of the vertical axis always hampered the implementation of advanced portal forms (excluding the cases of direct imitations of the medieval mausoleums

and during the latest period only). A vivid example of the above is the mausoleums of East Kazakhstan, which didn't have any portals at all (excluding two cases only). They achieved simple laconic volumes with the domes of higher outlines. In our opinion this phenomenon took place due to their conditional isolation and independence from the centers of medieval Islamic architecture (South and Central Kazakhstan). That aspect was the positive factor to maintain and reproduce traditional worldviews of the Kazakhs.

### 5.3.4. Use of Burnt Bricks Fostered the Process of Loosing of Traditional Compositional Structures of Mausoleums

The introduction of the burnt bricks, the according influences of the "bricks related" and "modern" styles during the 19<sup>th</sup> – the beginning of the 20<sup>th</sup> centuries, which were widely spread within the architecture of the Russian Empire, led to the updating of compositional priorities. The shift to clear geometric forms took place. The importance of decorative partitioning in the kind of brickwork belts, lizernas, curbs etc. was paid attention to. Those architectural "updating" happened simultaneously with the process of weakening of prevailing traditional worldviews. Consequently, they changed to some extent the existing compositional priorities which resulted in architectural imitations and improvisations, based on the forms of medieval mausoleums.

Such phenomenon was found in the regions with better preserved examples of the medieval architecture (especially South and Central Kazakhstan). But at the same time, within East Kazakhstan, besides the impact of the urban culture and the erected network of railway stations, the Kazakhs didn't give up mentally their traditional worldviews. So, the burnt bricks which suggest the development of diverse brickwork belts, parapets and other wall partitioning devises appeared to be ignored (excluding two absolutely unique cases that were built at the very end of the period). Thus, within the regions where the social values of the nomadic culture were preserved, the memorial architecture of the Kazakh period was concentrated on the highlighting of the dome domination. These relict worldviews were expressed by the specific type of the architectural space arrangement, which was advanced along the vertical axis. That is why there were widely spread special forms of domes. They were implemented by the brick laying overlap and became the reason for their higher outline. But nevertheless, the mausoleums of complicated volumes were also developed. They were quite plenty, but the fundamental strive in any case was - the laconic unified generalized volume.

### 5.3.5. Specific of the Interior Arrangements of Kazakh Mausoleums

"Ignoring" of the volume horizontal partitioning, which might have broken the vertical "dynamics" of the space, was specially expressed in the compositions of the interiors.

Very often unfinished and “vague” forms didn’t strive to demonstrate the “activity” and the importance of the constructions. On the whole, the “separation” of the outside space from the inside one makes the Kazakh mausoleums be united to some extent with the monuments. The interior of mausoleums that were decorated as if they had been the yurts was widely spread – the wall painting was either the imitation of carpets, or kerege, or nomadic bags etc. [15]. Sometimes the interior decoration reproduced nomadic everyday life scenes, or the caravans procession, and so on. The Kazakh mausoleums interior decoration was “inclined” to isolate it from the outside space, to create its own “world” that had parallel existence.

### 5.3.6. Dialectics of the Outside Forms and the Interiors of the Medieval and Kazakh Mausoleums

The medieval mausoleums (10<sup>th</sup>-15<sup>th</sup> centuries) and the Kazakh ones (15<sup>th</sup>- the early 20<sup>th</sup> century) are worth comparing as per this aspect. If the medieval mausoleums were developed from the “inside to the outside”. They expressed the esthetics of the solutions of construction forming process - the emerging of the under-dome drum as the reaction to interior architectural design etc. The Kazakh ones – vice versa. They managed to develop finally the tectonics of the under-drum constructions only by the 19<sup>th</sup>-the early 20<sup>th</sup> century. It was quite late and even not all of them. The interior was paid attention to, in terms of the mausoleum’s composition, only at this time. The “merging” of the interior and the outside space of the mausoleum took place only at the end of the specified period. It was the result of the process of advancing of composition related experience. That achievements happened in the locations adjacent to the regions with the intensive social activity (proximity to cities, caravan related ways etc.). That aspect certainly fostered the fading of ancient worldviews that determined the vector of the development of the composition of the Kazakh mausoleums.

### 5.3.7. Cultural Multi-layering of Kazakh Mausoleums

Kazakh memorials have archaic features of architectural structures because their origin takes place in the deep ancient times, besides the later period of their erection. Their main specific is the forming of the outside image which is often handled at the cost of their interior design finishing and the development of architectural constructions as well. The prevailing specific of all domed mausoleums (even those having “opened” domes) is the highlighting of the domination of their vertical (“sacral”) axis. On the whole it has been the dome. This aspect has been correlated with the Kazakhs worship of ancestors. It has also been the basis for the forming of the so-called “pro-symbol” that determined the vector of the mausoleum form-development process (Oswald G. Spengler). It is not occasional that it is the characteristic of the Kazakh mausoleums that the burial chamber (gur-khana) is prevailing in size the praying one (ziarat-khana). Moreover, the “munara”-towers, laconic vertical volumes found only

in the Kazakh locations, also confirm the above conclusion. The “echo” of such worldviews had been kept among the Kazakhs-nomads till the early 20<sup>th</sup> century and resulted in the according space arrangements of memorials. The Kazakh culture had its own “world picture” with its own symbolic meaning. It was based on the ancient worldviews that were reproduced most of all in the compositions of memorial architecture.

## 6. Result and Discussion

Both methods of comparative and system analyses (some elements of it) have been applied as per this research. The low level of knowledge on the process of the evolution of the Architecture of Kazakhstan and the lack of compelling scientific generalizations have been the basic causes of the problem of the absence of scientific discussions for many years already, to our great sorrow. The researchers dealing with the ancient, medieval and Kazakh periods of regional architecture [16-33] have scrutinized its evolution only in line with the certain time frames - separately, without considering the adjacent periods. Contemporary researchers of the architectural archeology, i.e. the ancient and medieval periods, deeply explore the architecture of the certain period or the region of Kazakhstan only. They suggest the ancient roots of the Kazakh architecture at their best, but they don’t pay proper attention to the problem of the space arrangement even of the considered periods. M.M. Mendikulov [18] specifies the roots of one of the principle features of the medieval architecture. The so called tent shaped dome (cone or pyramid shaped ones) derives from the memorial architecture located on the downstream of the Syr-Darya river (Kazakhstan). He considers it to be emerged and formed during the late Bronze Epoch and the antic times. “The volumetric composition and the building devises of the outstanding monuments of those epochs – mausoleums Tagisken and Balandy-2” – he identifies - “...appeared to be the prototypes for the tent shaped mausoleums of the subsequent periods that became widely spread all over the territory of Kazakhstan and Central Asia”. B.A. Glaudinov [34, 35] considers the whole process of the Kazakhstan architecture evolution. He suggests it to be the linear one (smooth and successive) starting from the ancient times and up to nowadays: “The main condition and the basis for the emergence of the folk architecture of Kazakhstan were the concession in the development and the sustainability in keeping of architectural-artistic traditions, which were formed during the Karakhanids period [35]. “The essence of the succession in culture related spheres, the architectural art included, is focused on the “inheriting of architectural-artistic ideas, artistic principles and also in preserving of the form-content structures” and architectural elements. All the above means the link between the separate periods of architecture development, also between diverse artistic directions and regional

architectural schools”.

The authors of this study, have scrutinized specific features of the Kazakhstan architecture evolution within certain time frames - ancient, medieval, late-medieval and Kazakh periods. Moreover, the comparative analysis of the form-development processes has been applied. The research was also implemented via the prism of the global process of the mankind's development. The following conclusions have been achieved - the types of the space arrangement within the considered periods were diverse and didn't express the linear process of the architecture development starting from the ancient times and up to the early 20<sup>th</sup> century.

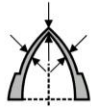
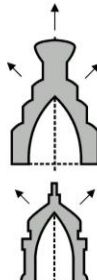
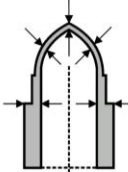
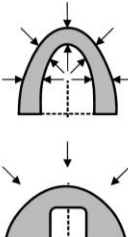
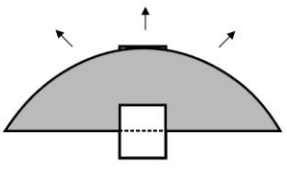
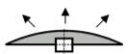
At the first stage of the evolution the overriding principles of the building art emerge. Following achievements took place: learning of the main fundamental geometric forms (circle, square) set up on the plane (layout, plan), and also of the phenomena of symmetry and rhythm. The priority of the plan over the volumetric-spatial composition was the characteristic of that period.

During the second period the advanced level of artistic component that was developed by the methods of the architectural composition (rhythm, proportions, meter, nuance, contrast etc.) took place. It was based on the principles of harmonization and determination of the forms proportions by means of the methods of geometry. Within that period the most harmonized compositions were created.

During the latest, the Kazakh period of traditional architecture, the principle of domination of the vertical axis,

as related to the space arrangement, was the basic one. It was also the main idea of the compositions of monuments both on the whole and in their details.

We draw your attention to the peculiarities of the correlation of the exterior and interior silhouettes of the memorial structures within all the three specified periods. One can realize them looking at the cross-section of the architectural monuments (Figure 11). The increasing of the outside shape as compared to the inside one is typical for the ancient period. Later on this specific was gradually fading. During the medieval period, harmonized combination of the exterior and interior of the structure took place. As related to the Kazakh period, besides the harmonized combination of the exterior and interior of the buildings, the growth of the outside shape of the constructions also occurred. That phenomenon was encouraged by striving to create new artistic image. Nevertheless, considering the process of space arrangements which look as if they start newly within each specified periods (identifying some certain aspects of the succession), the process of progressive development of the composition takes place, especially during the transition from the ancient times towards the medieval period. It included the forming of constructions, unifying of the shapes of outside and inside spaces of the structures etc. So, due to the applied systematic approach, the study of the process of the architecture of Kazakhstan evolution, with regards to the specifics of the space arrangement during each considered period, has reached higher and deeper level of its scientific analysis.

	Initial trend of the evolution of the external surface	Hypertrophic development of the external surface as compared to the internal one	The trend to correlate the external outline to the internal one	Balance of the external and the internal contours	Centrifugal strive of the external contour to move off the internal one
Kazakh mausoleums, XIX — XX centuries					
Medieval mausoleums, X-XV centuries					
Vaulted structures, I millennium AC					
Sacks kurgans, middle of the I millennium BC					
Early kurgan-like structures, II-I millennium BC					

**Figure 11.** Evolution of the External and Internal Contours of the Regional Memorial Constructions. Source: E. Baitenov.

## 7. Conclusions

There were diverse types of space arrangement within the three periods of the regional architecture evolution. These periods are as follows: ancient, medieval and the later one – the Kazakh period. The tombs of the Sacks of the ancient period were erected in line with the dominating of radial-circular plan scheme which determined first of all the development of centric compositions and also the character of the interior partitioning, which were arranged in accordance with the “line of forces” of that scheme (radial and circular). At the same time this scheme didn’t impact much both the volumetric-spatial structure and the silhouette of the construction which were very simple and unfinished as per their artistic aspect if to compare them with the layouts of the constructions. So, the Sacks architecture is conditionally identified as the one of the “layout constructions”, which emerged on the horizontal plane.

On the contrary, the medieval period is characterized by quite simple plans of one-chamber volumes (most often they were volumes having square plans and extremely rarely octagonal ones) which develop complicated space arrangement as per the vertical axis in the kind of three levels arrangement which are interlinked with each other as per the construction needs. The general volume of the constructions included the main volume with the square plan (chamber), octagonal tier of the under-dome constructions (which was the basis for the under-dome drum development) and the dome which is round as per its plan (there were some very rare exclusions). The logics of the development of the architecture of medieval mausoleums led to the emergence of the special composition which consisted from three horizontal levels (basement – dome drum – dome) and what created the sequence of geometrical forms with the purpose to achieve the effect of relieve of the visual image towards the top. The latter effect was handled by the “rounding of the plan” (square-octagonal-circle). So, usually massive basement had square plan, the under dome drum, which was the “intermediary” between the basement and the dome and that is why – octagonal plan, and the dome – as the crowing and the most “lightweight” element, which was of round plan. All those components developed together the stepped silhouette of the construction. Vividly highlighted geometrical image of the forms and harmonious, logically arranged system of their combination with each other, were achieved by the impact of advanced level of sciences (geometry, logics included), which encouraged diverse practical activity, architectural composition included.

The process of the form-development of the regional architecture during the medieval period consists of several phases. First of all, the two-part domed volume based on the local pre- Islamic architectural forms was developed, i.e. - the main chamber with the square plan which was crowned by the dome. Later on, the construction related solutions (most evident in the interior – corner arch

pendentives) that provided the development of such volumes were reflected on the outside forms. Then the separate development of the outside space and the interior took place, which was spread everywhere among Kazakh mausoleums of the end of the period (we can determine this process as “detailed” decoration in some cases).

With regards to the above, we can specify one more conclusion as per the space arrangement of the medieval mausoleums. Their interior is more functional (construction oriented), but the outside forms are more artistic. On the whole, if to compare the architecture of that period with those of Sacks and subsequent Kazakh ones, it is evident that it appeared to be the most harmonized and balanced one in terms of the general composition of the buildings and the correlation of their outside forms and the interiors.

The regional memorial architecture of the subsequent period is the Kazakh one. There were prevailing the values of the nomadic culture on the territories of the distant steppe which became the base to express initially in architecture (might have been sub-consciously the cult of ancestors’ worship). That is why the accent was unavoidably made on the domination of the dome (existed till the early 20<sup>th</sup> century). That relict worldviews were reflected in the specific type of space arrangement which was developed along the vertical axis and so, there were widely spread the domes of higher shapes which were erected by the brickwork overlap. The prevailing of the metaphorical beginning, the meaningfulness of the building which was correlated with the outside forms, fostered to veil its constructions related arrangements, especially inside it - in the interior. On the whole, the “separation” of the outside volumes from their interiors correlated them with the monuments. It is worth comparing with this regards, the medieval and the Kazakh mausoleums. If the first ones were developed in some aspects “from the inside towards outside” (the emergence of the under dome drum as the result of the arrangement of the pendentives – inside constructions which provide the shift from the square basement to the round dome). Then it looks like, the second ones undergone their evolution as per vice versa way. The Kazakh mausoleums developed quite late, mainly by the end of the 19<sup>th</sup>-the early 20<sup>th</sup> century, compositionally finished under drum constructions and started to pay attention to their interior in terms of the architectural composition. Only during the final phase, during the early 20<sup>th</sup> century, due to the advance of the composition related knowledge, the “merging” of the interior and the outside space of the most mausoleums took place.

This specific was most vividly expressed in the locations adjacent to the regions with intensive social activity and communications, which additionally to the architectural borrowings fostered the fading of ancient worldviews that determined the vector of the development of the composition of the Kazakh mausoleums. It appeared to be the final link of the three-thousand-year lasting period of

traditional space arrangement process, which took place at edge of the global change of the architecture development paradigm (European architecture, especially since the 20<sup>th</sup> years of the 20<sup>th</sup> century).

The research of such great experience is of high importance in terms of the study of the problems of regional self-determination and identity in the circumstances of overwhelming globalization. The present-day national architecture of Kazakhstan (and Central Asia on the whole) vitally needs to develop its own “language” which should become crucial and inevitable. The applied systematic analysis results should also become the basis to estimate the role and artistic level of some monuments of architecture within the whole memorial architecture of Kazakhstan.

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