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# The Central Monument of Akchakhan-kala: Fire Temple, Image Shrine or Neither? Report on the 2014 Field Season

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## Introduction

The Karakalpak-Australian Expedition to Ancient Chorasmia (KAE) archaeological works at the “Mausoleum” of the Ancient Chorasmian site of Akchakhan-kala in modern-day Uzbekistan/Karakalpakstan resumed in 2014 after a hiatus of almost twenty years. New data on this structure, located at the exact centre of the upper enclosure of the site, underline its monumental characteristics and help to rectify and update the preliminary hypotheses presented in 2001 by the KAE. Examined in the historical context of I century B.C.–II century A.D. Chorasmia, Akchakhan-kala has proven to be a site incredibly rich in archaeological data that are enlarging our historical knowledge on this ancient polity and more in general on the Central Asian region during Antiquity. The Central Monument of Akchakhan-kala, a Chorasmian royal seat abandoned at the end of the II century A.D., from which a new perspective on Zoroastrianism is emerging, is perhaps one of the most interesting complexes related to this Eastern-Iranian region and to Zoroastrian religion.

## Historical Background

Ancient Chorasmia is a polity that belonged to the Indo-Iranian koiné of Central Asia. It corresponds to today's northern areas of Uzbekistan, i.e. the territories of the Republic of Karakalpakstan and the district of Khorezm, and the north-western

part of Turkmenistan, district of Daşoguz (fig. 1). The territory of this polity is characterised by a very rich historical landscape with many fortified strongholds (the Russian *gorodishche*),<sup>1</sup> which were used to secure and control a vast irrigated agricultural territory marked by canalisation works and other infrastructures. This “oasis,” surrounded by the desert wastes of the Kizil-kum and Kara-kum, developed mainly on the fertile delta of the Amu River (the Oxus) in particular since the VI century B.C., when the first monumental architecture appeared, probably due to an external intervention in the area by the Achaemenids.<sup>2</sup> Its culture and history, which had developed since that time in a cultural continuum, entered a new and radically different phase only with the advent of the Arabs and the Islamisation of the country at the beginning of the VIII century A.D.<sup>3</sup> Although not strongly influenced by Hellenism as was the rest of Central Asia during the II century B.C., Chorasmia did acquire some of its culture. The polity always had relationships with the other sedentary polities of Central Asia and also with the semi-nomadic populations of dwellers of the northern steppes; its geographical position favoured the cultural exchanges between these two “worlds” but also local conservatism. It is only during the I–II centuries A.D. that Chorasmia progressively lost its partial isolation and was integrated into a broader network of external relations.<sup>4</sup>

More recently, in relation to the history of archaeology, this territory had a very important past

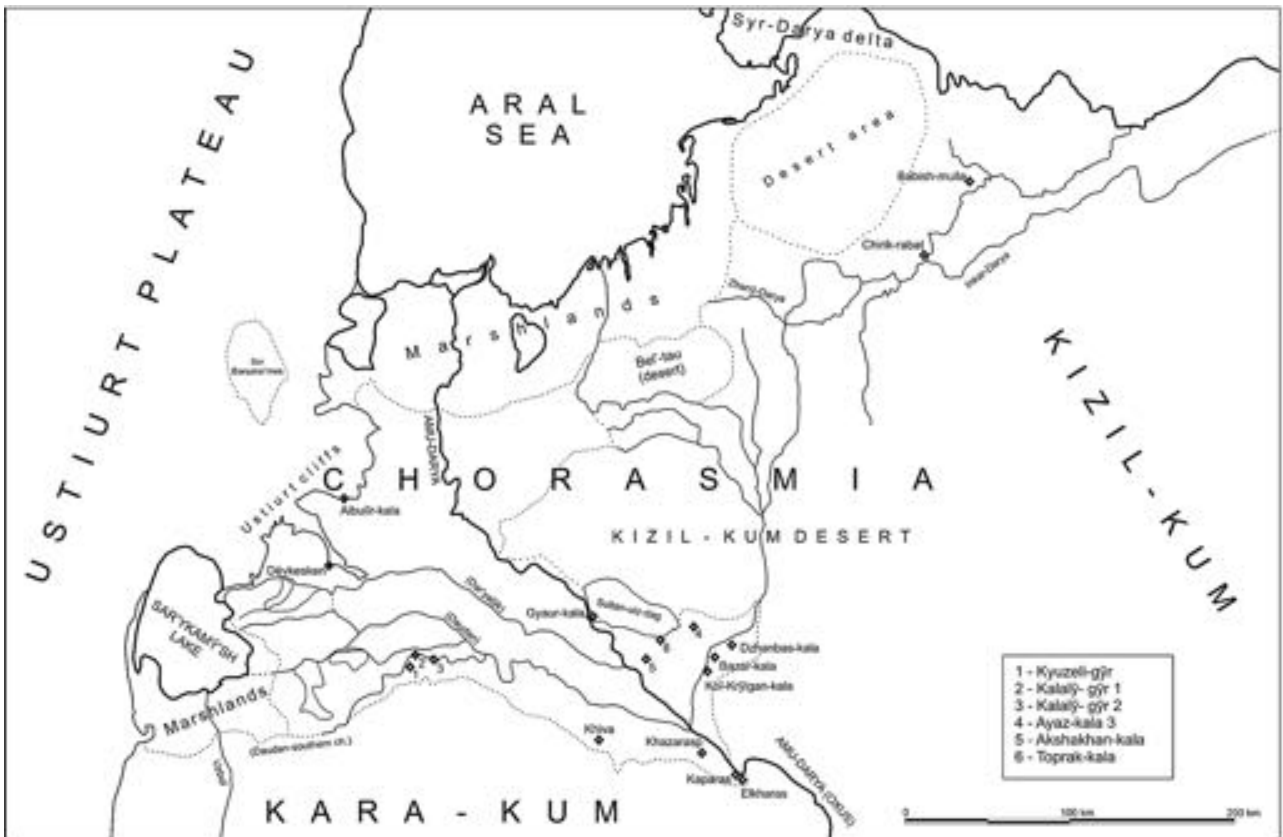


Fig. 1. Geographical outline of Ancient Chorasmia with location of main sites. (All drawings and photos by M. Minardi except fig. 2.)

as the theatre of operations of the Soviet “Chorasman Archaeological-Ethnographical Expedition, division of the USSR Academy of Sciences” (KhAEE) led by S. P. Tolstov (1907–1976), an expedition that endeavoured to rediscover this neglected part of Central Asia with one of the most significant archaeological efforts of all times.<sup>5</sup>

In more recent years, since 1995, the Karakalpak-Australian Expedition to Ancient Chorasmia (KAE)<sup>6</sup> with its field work mainly focused on the extensive archaeological excavations of the unexplored sites of Tash-k’irman tepe (ca. II century B.C.–II century A.D.)<sup>7</sup> and Akchakhan-kala (II century B.C.–II century A.D.)<sup>8</sup> added to the history of Ancient Chorasmia new important data that helped to revise the polity’s traditional historiography and chronology expressed in the KhAEE works.<sup>9</sup> Of the utmost importance is the corpus of wall paintings discovered in the Ceremonial

Complex of Akchakhan-kala (belonging to its I century B.C.–I century A.D. stage)<sup>10</sup> and the cultic structure of Tash-k’irman tepe where fire played a certain central role.<sup>11</sup> The Akchakhan-kala wall paintings had, for instance, very recently led to two important discoveries regarding this site and Chorasmian society in general: the *gorodishche* used to be a royal seat, as proven by Chorasmo-Aramaic epigraphic evidence,<sup>12</sup> and a ceremonial centre related to Zoroastrianism,<sup>13</sup> as witnessed by the discovery of unmistakable Zoroastrian symbols painted on the plastered mud-brick walls of the Columned Hall of the Ceremonial Complex.<sup>14</sup>

Akchakhan-kala is a *gorodishche* principally characterised by being encircled by two systems of defensive works (the rectangular lower and an upper enclosures—fig. 2) and by the presence of a “citadel,” i.e. the Ceremonial Complex (Area 10),

## Takir surfaces with canals and structures

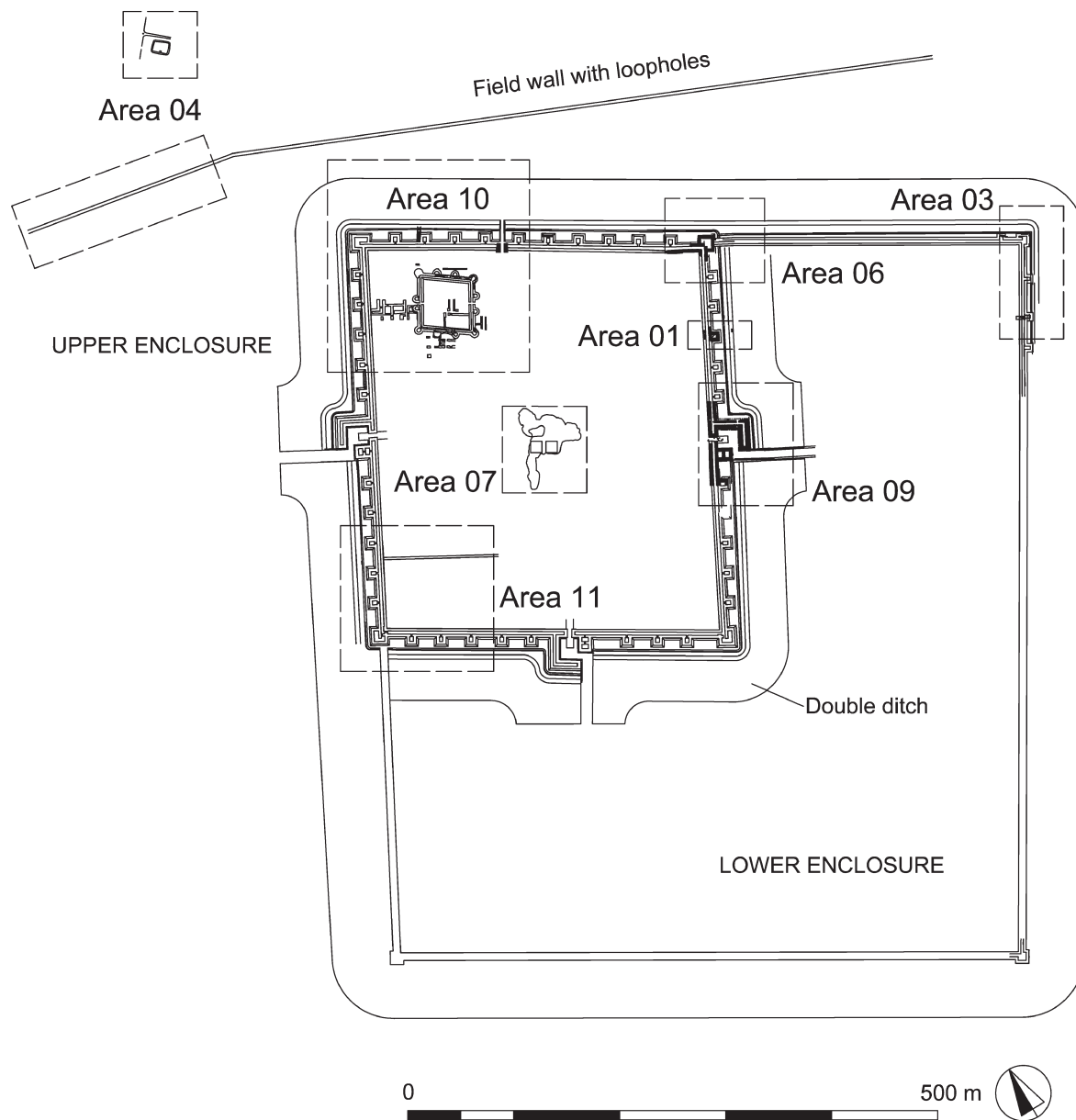


Fig. 2. General plan of Akchakhan-kala (KAE).

located on the north-western corner of the upper enclosure, where the wall paintings have been discovered with other scanty but significant finds. The scarcity of archaeological material in the Ceremonial Complex is due to the fact that this part of the *gorodishche* was abandoned and cleared during its II century A.D. stage. However,

among the few pieces of evidence, a burnt fragment of ivory furniture of Hellenistic taste has been found: it is very possible that this carved ivory leg is what remains of a fire altar.<sup>15</sup> Field work indicates that the Central Monument and the Ceremonial Complex would have been connected through some path yet to be discovered:

the main gate of the Ceremonial Complex appears on present evidence to be the southern one, and it opens to a descending route flanked by two small edifices characterised by fire features.<sup>16</sup>

The Central Monument of Akchakhan-kala (Area 07—approximately 2,180 sq. m) is located at the geometric centre of the upper enclosure wall of the *gorodishche* (fig. 2) and stands above the level of all other constructions at the site: its highest preserved point is 9 m greater than the elevation of the floor level of the Ceremonial Complex. The complex mainly consists of a building composed of two square solid towers/plinths made of mud-bricks (ca. 10.5 m per side), connected through a vaulted chamber in their midst (fig. 3, general plan of the complex; fig. 4, sections and fig. 5, topography of the area). The westernmost of these two plinths is accessible by a mud-brick ramp on its southern side, a ramp that is parallel to the fortification walls of the site (on a NE–SW axis) and orthogonal to the main Central Monument structure (figs. 6 and 7). The length of the ramp, from which the overlying sand was not fully removed during the season, is ca. 35 m with a difference in elevation from the higher preserved point (north) toward its end (south) of ca. 4 m. Its total width is equivalent to ca. 9 m. On the northern and opposite side of the ramp (Area 07-02) is attested an area of ca. 1,200 sq. m covered by a crust of clay and scattered debris (that is above contexts of aeolian sand) with a difference of height of ca. 4 m from the existing sand surface. This was certainly formed by recent wash-off from the top parts of the plinths. As now is known re: the ramp, the Central Monument also seems to have been raised on an artificial platform, and this crust formed on top of the debris of the structures of the complex that were themselves overlain by silting. Therefore the Akchakhan-kala Central Monument, for its particular layout and position on high artificial ground at the centre of the upper enclosure, is most likely to have played a relevant role in the religious and political function of the whole site.

Area 07 was first studied by the KAE in 1996. Sondages conducted by Helms, Betts and Yagodin led to a preliminary report published in 2001.<sup>17</sup> The main scope of the 2014 campaign was to rectify the preliminary plan of the monument and to establish its general architectural layout and actual extent, collecting new data in order to integrate and update the previous ones gath-

ered almost twenty years ago in difficult conditions<sup>18</sup> and without proper survey equipment. The area was first cleared of the sand in order to control the preservation status of the structures, to plan them and to confirm the position of the old trenches. These operations were concentrated primarily around the two plinths, where trenches around their perimeter have been identified and partially emptied of their sand backfilling, and secondly on top of the ramp, which was only partially identified and planned during the previous investigations.<sup>19</sup> The area north of the western plinth (Area 07-02) along with a small area on the eastern side of the ramp have also been investigated (Area 07-01, see fig. 3). These works resulted in the discovery of a new vaulted chamber on the northern side of the complex connected to the western plinth, and the individuation of a stepped *paksha* basis for the mud-brick ramp (on this *infra*). For reasons related to the preservation of the monument it was decided to avoid the clearance of the top of the plinths and of the ramp except for the overlying sand.<sup>20</sup>

### Preliminary Notes on Stratigraphy and Architecture

The evidence that emerged from the 2014 field season gives us the opportunity for a better reading of the Central Monument with some new data that changes our former understanding of this monument.

First of all, we now know that the main part of the monument did not only consist of two plinths flanking a vaulted rectangular chamber: it is certain that on the northern portion of the monument—i.e. its façade—two other projecting vaulted rooms existed (figs. 8–11). In the case of the western plinth, where the excavation concentrated in 2014, the vault (4 m of span) connected this element to a room characterised in its interior by steps directed toward the west (fig. 10). On the front of the other opposite plinth not only traces of the springer of the vault have been found (fig. 3, “remains of the E vault” and fig. 9) but also the top part of another structure has been documented (fig. 3—“structures N of the E plinth”). Therefore the monument did not seem to resemble a monumental arch at all, but a sub-structured terrace reachable from a ramp on its southern side.

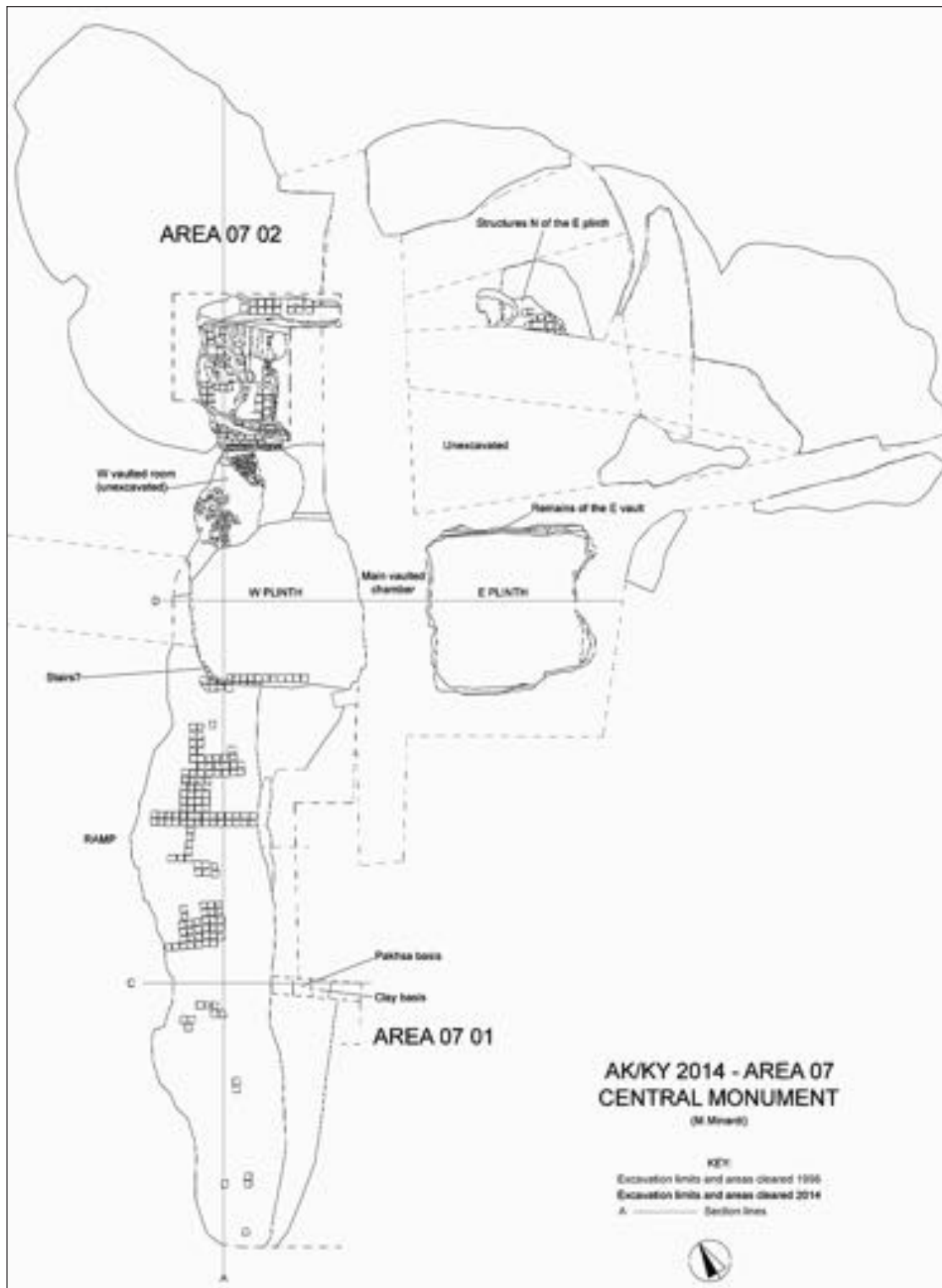


Fig. 3. General plan of the Central Monument of Akchakhan-kala as surveyed in 2014.

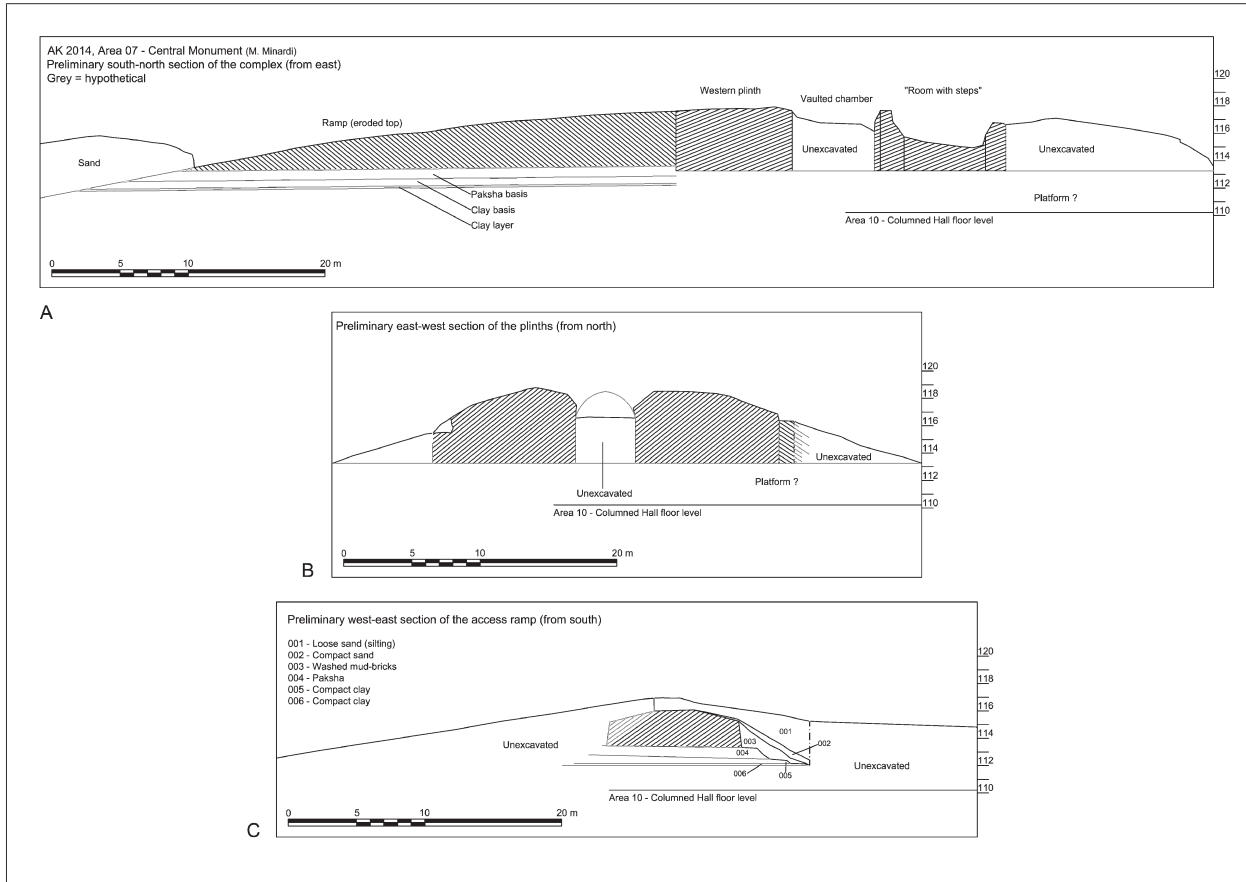


Fig. 4. Preliminary sections of the Central Monument.

The “room with steps” on the northern side of the monument measures  $8.8 \times 9.6$  m, with its northern and southern walls of 2 m of thickness. The room is open on its eastern side while on the opposite western one the wall is eroded.<sup>21</sup> The northern wall is 8.8 m and the southern one, with the impost of the vault in front of the western plinth, is 4.8 m: it probably has a passage that leads to the inside of the vaulted chambers (unexcavated—fig. 12). All these measurements are relative to the poor state of preservation of the structure, which presents evident signs of erosion and washing: even the mud-brick steps (ten rows supposedly) are almost completely washed away in the northern portion of the room and badly preserved in the other parts. In the interior neither traces of a collapsed roof nor of any sort of other material—if not for a few pottery fragments washed inside the room from the rest of the build-

ing—have been found, which points to the fact that the chamber was robbed before its abandonment. It was then left exposed to the winds and rain for a long period of time until aeolian depositions of sand completely filled the area and were sealed by the washed mud-bricks/clay coming from the surrounding and higher structures. It is very clear, however, that this building in its latest phase was built as one architectural body: the steps are clearly bonded to the walls (fig. 13).

The southern access ramp, with an inclination of 11 degrees, appears to be solidly built with mud-bricks laid with clay mortar only at the top and sides of the structure.<sup>22</sup> After the partial removal of the sand on the eroded top of the ramp (uncovered for a length of 35 m and probably 44 m long in total, see fig. 4, A)<sup>23</sup> and the excavation of the 1996 sand backfilling on its north-eastern side, a small sounding was carried out at a dis-



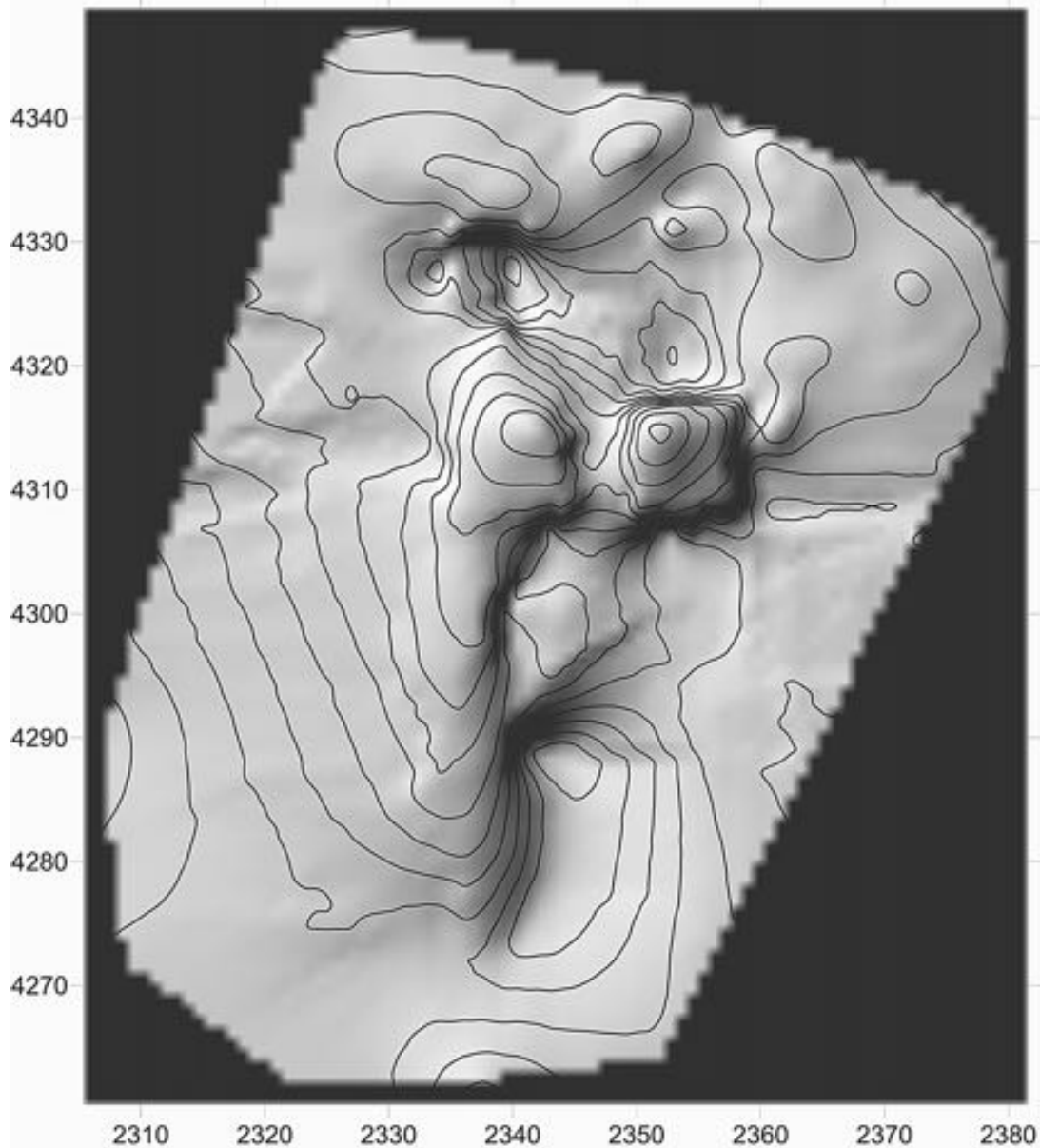


Fig. 5. Shaded relief and contour maps of Area 07.

tance of 18 m south of the western plinth where terrain conditions seemed more adequate in order to understand the ramp height and construction technique (Area 07-01; fig. 3). This revealed that the mud-brick ramp is built on a stepped *pakhsa* platform (max. height 0.85 m)<sup>24</sup> in its turn covering a stepped clay basis (max. height 0.33 m) lying on the floor level (fig. 4, C). The floor level, a context of compact clay, also sloped eastwards, and

considering that its lowest known level is still 1.8 m higher than the Ceremonial Complex,<sup>25</sup> it is probably part of the artificial elevation of the whole architectural complex.

The ramp runs up to and leans against the western plinth of the main vaulted structure; it surrounds its south-western corner (on the western side for 5.6 m, on the southern one for ca. 3 m). The ramp was clearly built after the plinth, but in the



Fig. 6. The Central Monument viewed from the south. The access ramp is in the foreground.



Fig. 7. General view of the Central Monument from the south-east.

same stage. Moreover, thanks to its stratigraphic relationship with the ramp, the south-western corner of the western plinth has been preserved, unlike the others: the corner appears rounded and delimited by half mud-bricks. Another hypothesis,

if one considers this round corner different from the others, might be advanced if we ponder on the existence of a stepped end of the ramp reaching the top of the terrace sub-structured by the plinths and the vaults (fig. 3—“stairs?”).<sup>26</sup>



Fig. 8. General view of the two plinths of the Central Monument from the north.



Fig. 9. The eastern plinth from the north-east.

These data have to be integrated with those obtained in 1996 in a sondage on the western side of the western plinth that partially concern the ramp. The section published in 2001 (Helms et al. 2001: fig. 14) shows the southern side of a deep, narrow sounding made following the line given by the north limit of the ramp: no. 12, which lies on top of a context of bricks and sand (no. 11) and belongs to another platform of yet not clear extent<sup>27</sup> (unexcavated and covered by the collapsed vault between the plinth and the “room with steps”). According to the same sondage, the structure—likely the platform of the northern

part of the Central Monument—overlies a mud-brick basis of 1.5 m of height (no. 04) with an elevation almost corresponding with the floor level of the Ceremonial Complex. Therefore, it seems that the ramp and the central part of the Central Monument each have an artificial but clearly distinguished platform although designed in architectural unity.

The two massive<sup>28</sup> mud-brick plinths at the centre of the complex measure 10 m per side. The highest preserved elevation point on the western block is + 8.8 m from the floor level of the Ceremonial Complex, and + 5.8 from the floor level



Fig. 10. Remains of the vaulted roof of the northern side of the eastern plinth.

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Fig. 11. Detail of the "pitched" mud-brick work of the main vault (western plinth).

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Fig. 12. The unexcavated collapsed vault between the "room with steps" and the western plinth from the north-west.

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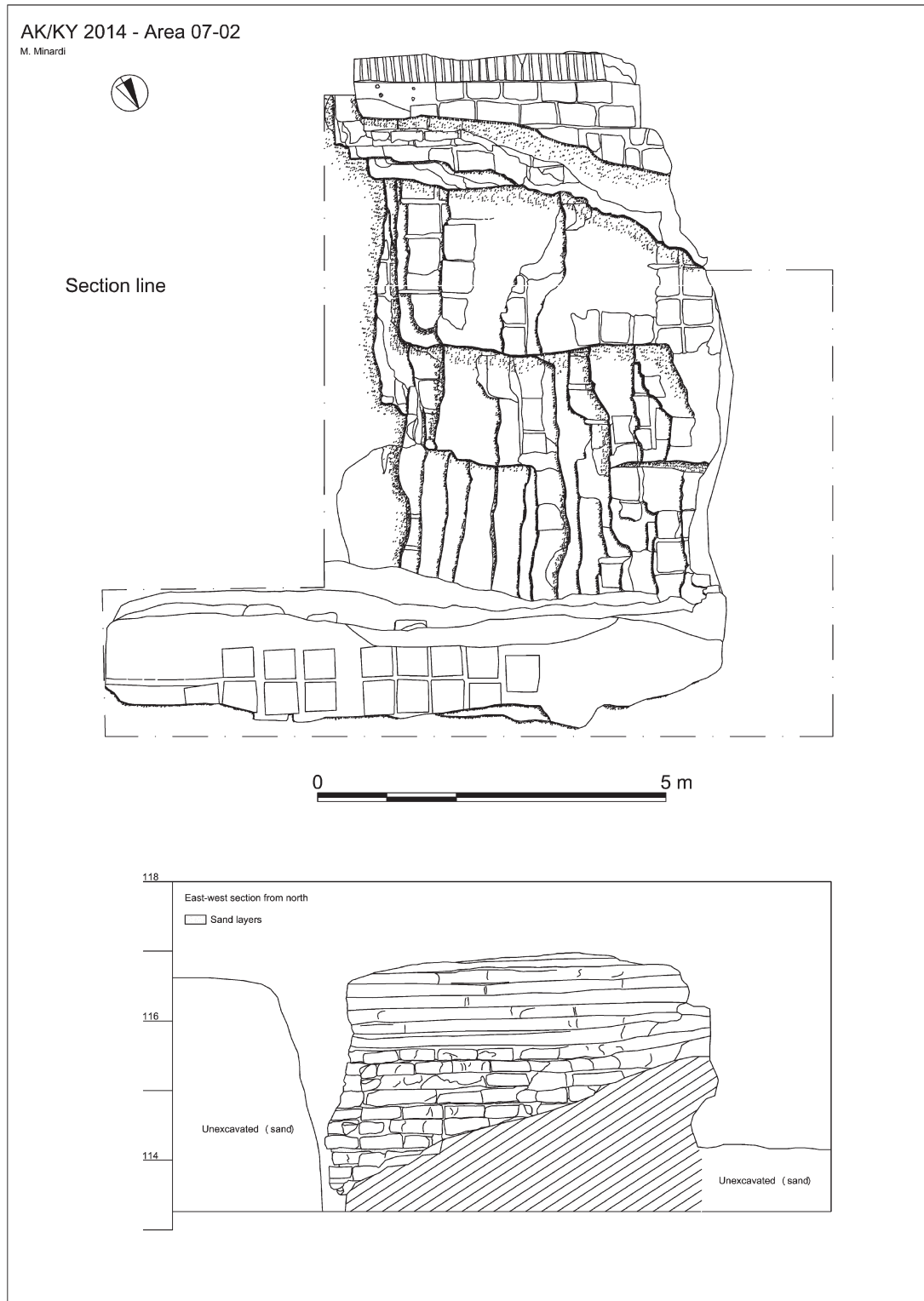


Fig. 13. Plan and section of the "room with steps" of the Central Monument.



Fig. 14. Detail of the main vault between the plinths from the south (western plinth).

of the room with steps (roughly equivalent to the top of the ramp *paksha* basis where excavated in Area 07-01). If the maximum preserved height of the ramp in its mud-brick elevation at the connection with the western plinth is 4.35 m, and the plinths are + 1.4 m higher, the plinths are preserved for approximately 6 m of their original height not counting their platforms.<sup>29</sup> On both plinths the most elevated and less eroded parts are the interior corners of the north façade. It is important to note that in the 2001 section what is indicated as “mudbrick revetment” (as no. 15), is actually a fallen portion of the wall of the western plinth.<sup>30</sup> This portion of wall—that measures 4.4 m in length—can help in the reconstruction of the height of the plinths, which in this hypothetical case should be, considering the height of the fallen side wall of the plinth on the western side, and considering as the floor level the lowest elevation point inside the stepped room, at least of 8 m.

The vaulted chamber between the two massive plinths used to cover the whole area between these two (45 sq. m) with a widest span of ca. 4.2 m and an estimated rise of more than 2 m. The barrel vault has a parabolic cross-section with vertical semicircular courses—i.e. it was built with the “pitched-brick method”: the trapezoidal mud-bricks<sup>31</sup> are not radial, but they are lodged in successive rings with their edges across the long axis of the vault, with each ring inclined at a 21° angle to rest on its predecessor,<sup>32</sup> while the shoulders of the vault consist of horizontal square bricks gradually shifted inwards (figs. 14–15). Mud mortar was used, as in all the other structure of the site.<sup>33</sup> It is unclear whether a thick arch or an actual end wall supported the vault on its southern side, a necessary device for this type of construction.<sup>34</sup> Almost of equivalent width and built with the same technique are the two other identified vaults on the northern side of the complex, each with a span of ca. 4 m. Of the eastern one only few in situ bricks



Fig. 15. The “room with steps” viewed from the north-east.

remain (fig. 10, fig. 3—“remains of the E vault”), while the western one has been identified but not excavated (fig. 12, fig. 3—“W vaulted room”).

The incline of the bricks of each vault follows a direction toward the outside of the complex (fig. 12). The three vaulted roofs crossed in a junction on the northern side of the monument. But it is unlikely that this t-shaped convergence of vaults, consisting of the central one between the plinths and the two east and west wings, would have formed a domical vault: it is more probable that the main central vault, probably sustained by a radial arched doorway at its northern end, was completed for all its extent and that the two other ones—the wings—overlay it. The wings, in this case, should also have had radial arches (rest-

ing on pillars on their ends) overlying the central vault.<sup>35</sup> Some traces of this convergence remain on the north-eastern corner of the western plinth, which shows a rounded corner. Further excavation data are needed in order to ascertain such architectural features more in detail.<sup>36</sup>

On the northern area in front of the eastern plinth and mirroring the opened eastern side of the “room with steps,” another portion of the complex has been identified: it consists of the remains of a wall measuring ca. 5 × 2.3 m with traces of an arch or a vault open on its north side (fig. 3—“structures N of the E plinth”). This might be a specular chamber of the stepped room, opened on the interior of the complex although perhaps not perfectly symmetrical.



Pottery from the excavation came principally from the surface, from the sandy superficial contexts and the contexts of sand mixed with washed clay and debris all formed after the abandonment of the complex. We do not yet have material from a relevant stratigraphic sequence. Typologically speaking, within the common nomenclature created by the KhAEE, pottery shards range from "Late Kangyūi" to "Kushan" types, hence chronologically in line with the rest of the site (II century B.C.–II century A.D., *supra*).<sup>37</sup> Most of the specimens are fragments of khoums (*pithoi*) that used to be inserted in the masonry of the vaults.<sup>38</sup>

A 1996 C14 sample (Helms et al. 2001: 138) comes from a context that overlies the mud-brick basement (*ibid.* no. 04) with a range of 275–54 B.C. that fits the chronology of the so called Kangyūi pottery (III–mid I centuries B.C.) relative to Akchakhan-kala Stage 2. Among the surface finds there are some fragments of worked stone: "stone bricks" and fragments of column bases of green limestone that differ completely from the sandstone used for the column bases in the Ceremonial Complex.<sup>39</sup>

### The Central Monument as Cultic Structure: Characteristics, Antecedents and Parallels

According to the data so far available, the Central Monument of Akchakhan-kala in its latest phase<sup>40</sup> appears to be an artificial hillock crowned by a terrace of ca. 420 sq. m raised on two mud-brick plinths and sub-structured by vaulted chambers. The terrace was accessible by a 44 m long monumental ramp. This was the main body of the edifice, to which has to be added the "room with steps," which was probably covered by a flat timbered roof if not open (and so not part of the terrace),<sup>41</sup> and another chamber on its opposite side which projected from the northern "façade" of the plinths. On the other hand, if we consider among the possibilities that the vaulted corridor was prolonged toward the north (with a vaulted roof?) between the two northern chambers, the general plan of the complex would then consist of a larger sub-structured square terrace with a side of 25 m, developed around an intersection of vaulted corridors. In this case the "room with steps" should have had a timber roof, but it is unlikely that it was open on its eastern side as an iwan.

On the top of the plinths the structure reached a height of at least 9 m, thus ca. 11 m from the floor level of the Columned Hall of the Ceremonial Complex in its final stage. The architectonic effort applied by the Chorasmians to the Akchakhan-kala Central Monument is considerable although on a different and lesser scale when compared with the chronologically sequential palace of Toprak-kala, built on a square solid mud-brick platform 14.3 m high with a side of 92.5 m.<sup>42</sup>

It is the opinion of the author that the Akchakhan-kala Central Monument was a cultic structure. First, for its position within the site of Akchakhan-kala that in its turn used to be a royal seat of the Chorasmian kings and thus a central place that also yielded evidence of Zoroastrian worship;<sup>43</sup> and second, for its above-mentioned unique layout without dwellings or halls: it is a monumental artificial terrace erected in a land—the whole "Right Bank" Chorasmia except for the inhospitable Sultan-uiz-dag—characterised by a flat landscape. Additionally, the "room with steps" not being a staircase<sup>44</sup> points to the fact that it might be considered an assembly place/chapel such as those found in the contemporary temples (I–II centuries A.D.) of Dura Europos and called by French archaeologists *salles à gradins*.<sup>45</sup>

If this hypothesis is correct then the question to ask is: what kind of cultic structure this might be? "In studying Zoroastrian sacred buildings one has to consider, not the single question (. . .) was this a fire temple or not, but the compound one, was this a fire temple, or an image shrine, or neither?"<sup>46</sup> and one must "distinguish between the place where the sacred fire was preserved (. . .) and the place where the fire was brought from the temple to a high area visible to the populace."<sup>47</sup> Keeping in mind that the excavation has just begun, we must consider that up to the present moment no traces of fire have been spotted on the Central Monument area,<sup>48</sup> and the possibility of identifying the Central Monument with a fire temple is currently rather speculative.<sup>49</sup> At the same time, no chambers that can possibly be image shrines have been identified, or have traces of cultic images been found.

Since Herodotus,<sup>50</sup> it has been well known to scholars that the Persians had in origin a predilection for practising their rituals in open spaces, a practice that developed through time and also allowed the subsequent architectonic development of different religious places of worship.<sup>51</sup> Based on

the evidence from Naqsh-i Rostam and Pasargadae, it has been also assumed that to pray before an elevated fire could have been a rite peculiar to a Zoroastrian king.<sup>52</sup> The complex composed by the two stone plinths of Pasargadae (VI century B.C.), enclosed into a sacred precinct<sup>53</sup> spatially related to a late/post Achaemenid mud-brick terraced mound (partially made of mud-brick), is the earliest known example of a Zoroastrian open air sanctuary.<sup>54</sup>

In Iran (Elam) and Mesopotamia worship in natural and artificially raised high places has a long tradition, not necessarily connected with Zoroastrianism.<sup>55</sup> It is well known that since the III millennium in Mesopotamia, Eastern Iran and Central Asia ziggurat and ziggurat-like edifices were erected.<sup>56</sup>

More recently, and closer to the subject discussed here, the open-air, high-ground places of worship such as the cultic terraces built on Bard-é Nechandeh/Bard-i Nishandeh and Masjed-i Solaiman (Susiana) with a Seleucid first stage and a further development during the Parthian period,<sup>57</sup> and the Seleucid, Parthian and Roman temples of Syria that display a strong architectonic Hellenistic influence, are characterised by a traditional ritual praxis that required towers and high places, most likely showing continuity with those earlier Mesopotamian religious customs.<sup>58</sup> Even the Median Fort and the Central Temple of Tepe Nush-i Jan (VIII century B.C.–Achaemenid times)<sup>59</sup> had an internal ramp to gain access to their roofs. In Central Asia, Iron Age platforms with “religious and political functions” are attested at Koktepe<sup>60</sup> and Sangir-tepe IIC in Sogdiana (Uzbekistan).<sup>61</sup>

The two platforms of Koktepe were raised during the reorganization and strengthening of the site (Koktepe IIIa). The western one was accessible on its western flank by a staircase, a circumstance not dissimilar to the Central Monument of Akchakhan-kala (and to the podium of Ai-Khanoum, *infra*). The Sogdian platforms are probably related to Zoroastrianism<sup>62</sup> and to Achaemenid sway in Central Asia.<sup>63</sup> Also in Sogdiana, the site of Erkurgan (III/II century B.C.) presents a mud-brick tower-structured platform (36 × 25 m) that is accessible via stairs from the south.<sup>64</sup> Being located outside the site walls and with some human remains found on its top, it has been interpreted by the excavators as a *dakhma*—an option that must be excluded among the possible functions of the Zoroastrian Central Monument of Akchakhan-kala.<sup>65</sup>

At Ai-Khanoum in Hellenistic Bactriana, on the highest point of the acropolis, a sanctuary was erected open to the sky consisting of a square courtyard with at its centre a square podium (16 m per side).<sup>66</sup> The complex, oriented toward the east, had a stairway of baked brick leading up to the middle of its west facade. With regard to high-placed Bactrian sanctuaries, it is also important to mention the Kushan sanctuary of Surkh Kotal: a fine example of a high-ground place of worship (it had an acropolis with a temple accessible by a monumental staircase built on artificial terraces) also with an accessory platform on the plain 2 km east of the hill (with a last stage of the time of Huvishka).<sup>67</sup>

In Chorasmia the first cultic structures dating back to the Persian supremacy over this polity—that was an Achaemenid “nation” as well as the neighbouring Sogdiana<sup>68</sup>—are the stepped altars of Kyuzeli-g'yr (VI century B.C.), a “Left Bank” Chorasmian site that has been only partially excavated and published.<sup>69</sup> The site rises on a natural hill and is enclosed by a fortification wall. The citadel of Kyuzeli-g'yr is located at the centre of the site in the most elevated point, and it consists of a complex of different buildings.<sup>70</sup> In the southern part of this complex two rectangular mud-brick platforms are attested: the first of ca. 4 × 5 m, the other ca. 5 × 7 m, both placed in open courtyards. The first plinth has an access ramp of ca. 7 m that according to Vishnevskaya and Rapoport (1997: 157) permits the reconstruction of the height of this structure up to 3 m. Layers of ashes “on the whole area” and a “deep hole” at a distance of 4 m from the larger plinth filled with layers of ashes and a child’s skull, might indicate the cultic character of this area. These data might be compared with those relative to the purification ceremony hypothesised for Koktepe.<sup>71</sup> The Kyuzeli-g'yr platforms, according to the excavators Vishnevskaya and Rapoport (1997: 157–58), are comparable with the sacred precinct structures of Pasargadae and might be the sign of the codification of new religious practices.<sup>72</sup> The Akchakhan-kala Central Monument might be the I–II century A.D. local output of such primary ritual structural concept.

The Akchakhan-kala Central Monument seems an architectonic *unicum* even for Chorasmia.<sup>73</sup> The only comparable platform, similarly located in the middle of an enclosure and made of solid mud-brick architecture, is a monument of the

“Left Bank” Chorasmia *gorodishche* Bol’shaya Aibuiir-kala (IV–II centuries B.C. according to Mambetullaev).<sup>74</sup> This solid mud-brick platform (ca. 10 × 8 m) is accessible by a short flight of steps (highest elevation 5 m from the floor level) and probably on its eastern side through a ramp (ca. 3 × 2.5 m). It is surrounded by several chambers and walls of different stages, and a small mud-brick podium with a central depression found in a large room north of the main terrace has been interpreted as a fire altar.<sup>75</sup>

Another similar case might be seen in the unexcavated “Right Bank” site of Bazar-kala. This *gorodishche* has an architectonic layout quite similar to Akchakhan-kala with two rectangular enclosures. The site pre-dates the foundation of Akchakhan-kala (IV century B.C.)<sup>76</sup> and according to the first KhAEE survey it had a central elevated place in the middle of its lower enclosure.<sup>77</sup> Reference should also be made to a chronologically ensuing monument, still pre-dating the Akchakhan-kala Central Monument in its known I–II century A.D. stage: the Southern Chorasmian site of Elkharas.<sup>78</sup> Elkharas is an isolated site consisting of two buildings the “Western Building” (ca. 48 × 36 m) and the “Eastern Building” (ca. 84 × 24 m, with a lateral access ramp), roughly parallel to each other and strengthened by an outer wall. The “Western Building” was characterised—as the Akchakhan-kala Central Monument is—by a symmetrical distribution of its internal spaces (two rooms and a corridor) along a central axis consisting of a vaulted corridor. Moreover, it is probable that in a first stage<sup>79</sup> the construction had a square plan with a central corridor open on symmetrical chambers, a layout that can be compared with the *Mausolée de la nécropole hors les-mur* of Ai-Khanoum (III century B.C.) and the *Naus* of Dal’verzintepe (II–I century B.C.), both with the same funerary function that is dissimilar from that of Elkharas.<sup>80</sup>

### Preliminary Conclusions

Bearing in mind that much remains to be clarified, an attempt may now be made to make some preliminary final considerations.

Chorasmian sacred architecture, for its variability and lack of an architectonic standard, has always been a difficult issue to assess. To this we must add the chronic lack of local and for-

eign written sources that could have helped in the actual identification of cultic structures.<sup>81</sup> In the contemporary religious architecture of Chorasmia’s west the situation is almost equivalent, and it is hard to define a proper Parthian religious architecture for Iran and its surroundings<sup>52</sup> (not to mention the Achaemenid Empire). From a structural point of view, the same might be said for the architecture of Kushan Bactriana if we consider, for example, the absence of any vaulting at the sanctuary of Surkh Kotal for reasons hard to define.<sup>83</sup> However, if in Central Asia and Iran an architectonic pattern (with strong variations) might be seen—i.e. the temple with a columned cella<sup>84</sup>—this case again leaves out the Chorasmian polity up to the III/IV century A.D.<sup>85</sup>

The Akchakhan-kala Central Monument is an artificial high-ground/terrace accessible on one of its sides through a monumental ramp. It is characterised by two massive plinths and vaulted passages, and it seemed to have been decorated with special column bases different from the kind used in the Ceremonial Complex of Area 10. It also has an auxiliary room with steps, which as far as I know, is only comparable with some assembly/accessory chapels present in the contemporary temple of Dura Europos in Syria (and apparently a phenomenon exclusive of the I–II centuries A.D.).<sup>86</sup> This room indicates the non-private character of the complex, as well as its general architectural layout, but at the same time indicates that this structure was not a temple with living spaces for the clergy. And, finally, we have also to remember that the Central Monument was built on an elevated platform at the centre of a site, Akchakhan-kala, which provided important evidence regarding Ancient Chorasmian kingship and religion (but almost none regarding administration). The enclosures of Akchakhan-kala seem to be mostly empty, and these walls were the first constructions to have been raised along with the Ceremonial Complex (late III–II century B.C.).<sup>87</sup> Although at present for the Central Monument moment it is not possible to ascertain any phasing preceding the last one dating to the I–II centuries A.D., its position seems to indicate that the complex should have been part of the original and organic planning of the site.

The presence of the ramp on one of the sides of the complex indicates that this was accessible by a specific path from the west (actually southwest—in line with a gate of the upper enclosure)

and points to the fact that some processions must have ascended to the top of the monument where there was some other outdoor performance. Considering then the existence of a fire altar in the private chambers of the Ceremonial Complex—perhaps the “regnal fire” of the king<sup>88</sup>—this central and likely public monument raised from the ground could have been used to display such fire during seasonal community festivals (*Gāhāmbār*) or court ceremonies that involved the king.<sup>89</sup> It might even be inferred that this monument is a local Chorasmian interpretation of the stepped plinth/fire holder of Cyrus’ times in Pasargadae, in a country where traditions were actively continuing (e.g. the use of the Imperial Aramaic script up to the Arab conquest, the local indigenous era that lasted for seven centuries, some iconographic details on the Akchakhan-kala wall paintings that are relics of an Achaemenid influence). Field work will continue in 2015.

## Notes

1. For a survey of the Chorasmian fortified sites, see Khozhaniyazov 2005.
2. On the written and visual sources regarding the relation between the Persian Empire and Chorasmia, see Minardi forthcoming with references.
3. On the end of the Late Antique facies of Ancient Chorasmia (IV century–A.D. 712), see Minardi 2013 with references.
4. For further references, see Minardi forthcoming.
5. Tolstov’s publications remain the milestones in Chorasmian history (Tolstov 1948a, 1948b, 1962). For a full bibliography of the KhAEE published work, see Minardi forthcoming.
6. The KAE, led by A. V. G. Betts (University of Sydney) and V. N. Yagodin (Academy of Sciences of Uzbekistan—Karakalpak branch) is a joint project supported by the Australian Research Council. The author’s post-doctoral project is linked to biennial (2014–2015) field work in this area, which has received financial support from the French State in the frame of the “Investments for the Future” Programme IdEx Bordeaux, reference ANR-10-IDEX-03-02.
7. Helms et al. 2001; Betts and Yagodin 2008.
8. Helms and Yagodin 1997; Helms et al. 2001; Helms et al. 2002; Kidd and Betts 2010. In earlier publications the site of Akchakhan-kala (also spelled Akshakhan-kala) was called Kazakl’i-yatkan. The name has been changed from this local one to the name registered in the official heritage record of Uzbekistan. On the C14 dating of the site, see in particular Betts et al. 2009 and forthcoming.
9. For a challenge to the traditional chronology and a new proposal based on the available evidence, see Minardi forthcoming with references.
10. On the wall paintings, see Kidd et al. 2008; Kidd and Betts 2010; Kidd 2011.
11. Betts and Yagodin 2008.
12. Yagodin and Betts pers. comm.; Kidd and Betts 2010.
13. On the new evidence of Zoroastrianism in Chorasmia, see Betts et al. forthcoming. For some preliminary considerations, see Minardi forthcoming: 11–13 with references.
14. Among the wall painting fragments unearthed in the Columned Hall of Akchakhan-kala, there is a set of large pieces originally from its southern wall that when cleaned and restored in 2014 revealed the image of a male personage wearing a mural crown and with a sheathed *akinakes* strapped to his right leg. This colossal figure (5 m in height as is preserved from the crown to the knee) wears a tunic decorated with a broad central panel. This panel is subdivided into smaller sections and in each one of these there is a repeated motif of two opposing androcephalous roosters wearing masks that designate them as Zoroastrian priests. They also hold in one hand a *barsom*, the ritual bundle of twigs associated with Zoroastrian ritual. For further details, see Betts et al. forthcoming. The colossal figure has been tentatively identified with the Avestan god Srōsh.
15. This piece was found lying on the ancient ground surface at the corner of a burnt rectangular area believed to be a fire altar (unpublished). The piece is published in Kidd 2011 and also considered in Minardi forthcoming: pp. 107–8, fig. 27.
16. Unpublished. Work led by M. Minardi during seasons 2010 and 2011.
17. Helms et al. 2001: 130–31 and 138–39 with a general plan (fig. 13), a section of one of the sondages (fig. 14) and a reconstruction (fig. 15) that is now superseded.
18. The structures are covered by sand dunes, and the monument, due to its raised position, is quite often swept by strong winds that result in small but strong dust storms.
19. For their location, see Helms et al. 2001: fig. 13.
20. This is why the mud-brick layout of the structures is missing from the plans of this preliminary report.
21. The excavation included the outside on the western limit of the chamber as indicated in the plan, but it did not lead to any results (only multiple contexts of clean sand and some scattered debris).
22. The internal core of the structure could actually have been made of *pakhsa*. This is only hypothetical and ought to be ascertained although it is hinted at by the presence of *pakhsa* at higher elevation along the 1996 cut of the north-eastern side of the ramp (the

sondage was made at ca. 5 m south of the western plinth, see fig. 3).

23. An actual sand dune overlies the ramp and still covers its southern part. The hypothetical total length is deduced from the available data.

24. The top elevation of this *pakhsa* basis is equivalent to the floor level of the room with steps. But like the mud-brick top part of the ramp, this *pakhsa* basis seems to slope up toward north.

25. Which is on its turn artificially raised—forthcoming “Akchakhan-kala: An Interim Report on the Ceremonial Complex.”

26. The top of the plinths has to be cleared in order to further investigate this matter.

27. This area has been cleared to verify the relationship between the ramp and the rest of the structure. Contexts 11 and 12 overlie the ramp.

28. The plinths are not hollow. On the western side of the western plinth a robber pit dug into the structure points to this fact, as well as the collapsed eastern portion of the eastern plinth where the mud-brick framework is well visible (i.e. the concavity of the eastern plinth in fig. 3).

29. This must be verified by excavating the plinth up to their bases that, as stated, was not entirely possible during season 2014. The plan published here is based on the exposure of both plinths for a height of ca. 3.5 m, which was enough for a preliminary new plan due to the vertical nature of the walls.

30. Not inspected in 2014.

31. The standard trapezoidal mud-bricks of the vaults measure 40 × 28 × 22 cm. Trapezoidal bricks are commonly used for vaulting in Ancient Chorasmia (Khozhaniyazov 2005: 110).

32. The “pitched-brick” technique (not exclusively to mud-brick masonry) in which the need of timber centring is almost completely eliminated, and that presents anti-seismic qualities, has a long tradition and history that departs from the III millennium B.C. Mesopotamia (e.g. Tell al Rimah—Oates 1970, and even before, see Oates 1973, 1990), II millennium Suisiana (e.g. Haft Tepe—Negahban 1991), Egypt and goes through Assyria (e.g. Neo-Assyrian Khorsabad—see Besenval 1984: 119, with pl. 149 c), Parthian and Sasanid Persia (Reuther 1938: 499–500; Kawami 1982), arriving at the end of Antiquity in Justinian’s Constantinople (Ward-Perkins 1958), and beyond up to our day (Christensen 1967). For a general scrutiny on the technique, see Choisy 1883: 31–43; Oates 1973 and 1990; Besenval 1984, in particular 42–46, 160–62. On Central Asia, see Pugachenkova 1982. For Chorasmia, see Voronina 1952. Examples of Achaemenid times are also known (e.g. Lachish I, a stone vault—Wright 1985: 463 with references; for its chronology, see Fantalkin and Tal 2006) proving that in these areas this technique has an interrupted tradition. Mud-brick “pitch” vaulting was used in Elamite Susa (Besenval 1984: 107) but it is

uncertain for Achaemenid Susa (see Perrot 2010 with references; see also Amiet 2010). At Persepolis the mud-brick substructures east of the Palace of Xerxes (Palace D) consisted of a series of mud-brick vaulted chambers but their technique is unknown (Francovich 1966, fig. 20 and Besenval 1984: 126). The other mud-brick vaults known at Persepolis are those of the ramparts that show a variation of the “pitched” technique (comparable with that of Median Tepe Nush-i Jan, see Besenval 1984: pp. 126–27, with pl. 67). In Ancient Chorasmia examples of the “pitched” technique are attested for instance in the vaulted roofs of Koi-Krylgankala (Tolstov and Vainberg 1967: pp. 289–90 with fig. 118), at the palace of Toprak-kala (Nerazik and Rapoport 1981: pp. 23–24, with fig. 8), in the roofed rampart walks of Ayaz-kala (Tolstov 1948a: p. 104, fig. 41; Voronina 1952), and at Elkharas in South Chorasmia (Itina 1991: 87–88; Levina 2001—II century B.C. according to Minardi forthcoming)—but not at the earliest Chorasmia stronghold of Kyuzeli-gyr (Vishnevskaya and Rapoport 1997), as well as at Kalaly-gyr 2 (Vainberg 2004: 25—both sites on “Left Bank Chorasmia”) and in the V century B.C. manor of Dingil’dzhe (Vorob’eva 1973).

33. Although gypsum mortar is essential for monumental-scale barrel vaulting, this does not seem to apply to the case of the Central Monument (not comparable to some Sasanid vaults built with the same technique with a span of more than 25m—Reuther 1938: 500).

34. The “pitched” bricks are laid in one direction only, southwards, and for their first course they need to lie on a wall end (as first noted by Choisy in 1883), an arch or a strip of centring. The debris of the collapsed roof must be identified and studied in order to advance a proper architectonic reconstruction of the edifice.

35. Cf. Babyish-mullah 2, a funerary edifice in the Syr-Darya delta area, influenced by the Chorasmian architecture (Tolstov 1962: pp. 165–70, 167 with fig. 92; for further architectonic considerations, see also Besenval 1984: 129). Its current dating between the IV century B.C. and the II century B.C. is too high.

36. A hint on the existence of the dome in Ancient Chorasmian architecture may be seen in the architectonic ossuaries, but this datum seems to point to the ensuing period (III–V centuries A.D.—Rapoport 1971).

37. For a detailed consideration of the Chorasmian *facies*, see Minardi forthcoming: 87–103 with references.

38. Cf. Kaparas (Itina 1991: 161); cf. with Toprak-kala (palace and settlement) where in the masonry ceramic tiles have been used instead (Nerazik and Rapoport 1981: pp. 46–47, with fig. 24); outside Chorasmia, cf. Khalchayan (mid I century A.D.—Pugachenkova 1966: 78).

39. The original setting of these column bases is yet to be ascertained. The presence of vaulted roofs (the three “galleries” in a T-shaped deployment) and the

particular stone used for the column bases make one wonder about an eventual decoration of the monument.

40. The 2014 preliminary study of the visible structures indicates a contemporaneity of the complex parts.

41. No traces of material from the roof were found in the inside of this chamber (and the steps are quite eroded). But this is also the case of the Ceremonial Complex, deconstructed and abandoned in Antiquity at the end of Stage 3.

42. The platform of the palace of Toprak-kala has the shape of a truncated pyramid with a base of 92.5 m and a top surface of 82 × 83 m. Its volume is equivalent to 183,600 cubic m. The number of bricks used in the construction has been estimated to be equivalent to ca. 6 million of the size of 39.5/40 × 9/11 × 10 cm—Rapport and Nerazik 1984, *TKhAEE* 14: 21–22, 25–28. It is important to recall that this site, only 14 km distant from Akchakhan-kala, was a new foundation built after the abandonment of Akchakhan-kala.

43. Note that at Akchakhan-kala, until now the KAE failed to find any trace of administrative activities, if not for a single bone inscribed in Chorasmio-Aramaic with black ink, while the ceremonial aspects of the Ceremonial Complex are striking notwithstanding its deconstruction and spoliation in Antiquity.

44. A sounding beyond its western end did not reveal characteristics belonging to a monumental staircase.

45. Leriche 1997, 1999; Arnaud 1997. Downey (2003) uses the term “small sacred theaters.” One of these rooms was actually a *bouleuterion* (Leriche 1999). See also Downey 1988: 90–91, 99, 104–5.

46. Boyce 1979.

47. Frye 1976.

48. Excluding some large fragments of greenish bricks, evidently glazed by intense heat on one of their sides, found scattered on the surface of the site and at the bottom of the “room with steps” in a context of debris from the vaulted room between the western plinth and the same “room with steps.” These are probably mud-bricks reused in some kiln after the abandonment of the Central Monument and connected with some late activity on site (Akchakhan-kala Area 11—the southern citadel—shows data regarding the later post-abandonment occupation of the site).

49. On the structures identified as fire temples, see Schippmann 1971. For further reference, integrations and comments on this work, see Schlumberger 1972; Gignoux 1973; Bivar 1974; Frye 1976; Boyce 1979 and Boyce and Grenet 1991; on Surkh Kotal (Temple B) see Schlumberger, Le Berre and Fussman 1983. On Takht-i Sangin, Litvinskiĭ and Pichikyan 2000; on the temples of Pendjikent and Sogdiana, see Škoda 1987, 1998a, 1998b. The question regarding the existence of fire temples in Chorasmia has been recently addressed by Betts and Yagodin (2008) in relation to Tash-k'irman-tepe.

50. *Hist.* I. 132–33.

51. In particular since the reign of Artaxerses II (Boyce 1982: 209–84); for considerations on the development of the fire temple, see Boyce 1975; Stronach 1985; Betts and Yagodin 2008. On the debated matter regarding the religious monuments of Achaemenid Persia, see Boucharlat 1984 and 2010. On new data on the development of Central Asian temples, see Rapin forthcoming (*contra* Boyce 1975).

52. Francovich 1966; Boyce 1982: 112–13.

53. But a recent survey questioned the existence of such enclosure (Boucharlat 2002).

54. Stronach 1978: 139–44; 1985. For a recent new hypothesis on the plinths, see Amiet 2013. Trümpelmann (1977) has stressed the importance of the terrace as place of worship. As noted by Boyce and Grenet (1991: 150, 183), Kuh-i Khwaja seems an example of a post-Achaemenid Zoroastrian shrine built on natural high ground. See also Francovich (1966: 204–5) where a Pasargadae-like monument has been hypothesised for Persepolis.

55. On highland Elamite religious practices, see Álvarez-Mon 2013.

56. E.g. the four-stepped tower of Altyn Tepe (III/early II millennium B.C.) that, according to V. M. Masson (1981), is reminiscent of the Mesopotamian ziggurats; and in north-eastern Iran Turing Tepe “a gigantic structure” comparable with the Ur-Nammu (Deshayes 1977). For further references on such structures in Central Asia, see Besenval and Francfort 1994. Another pre-Achaemenid complex must be also mentioned here, although relative to VI century B.C. Iran, i.e. the platforms of Tepe Yahya (Kerman province—Lamberg-Karlovsky and Magee 1999; Magee 2004).

57. Bard-é Nechandeh/Bard-i Nishandeh was in its first phase an artificial platform framed by retaining walls and accessible by stairways (Ghirshman 1976: fig. 7); similarly the case of Masjed-i Solaiman (*ibid.*, fig. 26). For Bard-i Nishandeh Ghirshman actually proposed a pre-Hellenistic “Phase I” ending around the mid II century B.C. (Ghirshman 1976: 39). For criticism on Ghirshman’s interpretation of these “sacred terraces” as Zoroastrian places of worship, see Boyce and Grenet 1991: 43–48 with references.

58. Amy 1950; Downey 1976, 1988.

59. Stronach and Roaf 2007.

60. Rapin 2007: 36–42.

61. Rapin forthcoming: 20. For other Central Asian pre-Seleucid platforms with over-structures attested in the Surkhan-Darya valley, see Boyce and Grenet 1991: 182–83 (Pachmak-tepe) and Boroffka 2009 (temple of Kinkyk-tepe). For further references, see Martinez-Sève forthcoming.

62. “The sacred function of the monument, probably related to early Zoroastrianism (or at least to a local cult affiliated to the Indo-Iranian complex), is confirmed by the evidence of a ritual of foundation performed just before its construction” (Rapin 2007: 38).

63. On the Koktepe platforms and their parallels, see Rapin 2007 and Rapin forthcoming with references. Sangir-tepe IIIC is dated at the end of the Achaemenid period (Rapin forthcoming). For further references on the Achaemenid expansion in Central Asia, see Briant 1984, 1996; relative to Chorasmia, see Minardi forthcoming: 7–47 with references.

64. Sulejmanov 1991, 2000; Boyce and Grenet 1991: 191–92.

65. On the funeral practice of Zoroastrian Central Asia, see Grenet 1984. On Ancient Chorasmia's religion as interpreted by the KhAEE, see Rapoport 1971.

66. Boyce and Grenet 1991: 181–84 with references; Bernard 2010: 49–52, with a picture of the sanctuary at fig. 19.

67. Schlumberger, Le Berre and Fussman 1983: 75–81. The Surkh Kotal complex brings to mind also other—and preceding—examples of sanctuary on terraces, i.e. Greek complexes such as the Asklepieion of Kos and Hellenistic Pergamon, models later developed in Italy in Republican times (e.g. the sanctuary of Fortuna at Palestrina). On its cultural significance, see also Fussman 1977.

68. As principally attested by the royal inscriptions DB, DSe, DPe, DNa and XPh; and by the captions regarding the “nations” submitted by the kings of kings on their royal tombs: DNe and A2Pa. For further details, see Minardi forthcoming: 8–22.

69. Vishnevskaya and Rapoport 1997. This is only a preliminary report with scanty data, which only gives an outline of the site.

70. Vishnevskaya and Rapoport 1997: fig. 3 (= Minardi forthcoming: fig. 5 B).

71. Rapin 2007: 39. But no Zoroastrian orthodox would have been doing such a thing—Boyce 1975: 460. Cf. “Late Achaemenid” Sangir-tepe III C (Rapin forthcoming: 20).

72. Even if considered just as stepped altars, these Kuzeli-g̃yr structures are the earliest attestation of such kind in Chorasmia. In addition the foundation of the *gorodishche* has to be linked with the Achaemenid expedition in Central Asia (Minardi forthcoming). Cf. Strabo XI. 8. 4: the Sacae “when they were holding a general festival and enjoying their booty, they were attacked by night by the Persian generals who were then in that region and utterly wiped out. And these generals, heaping up a mound of earth over a certain rock in the plain, completed it in the form of a hill, and erected on it a wall, and established the temple of Anaitis and the gods who share their altar—Omanus and Anadatus, Persian deities; and they instituted an annual sacred festival, the Sacaea, which the inhabitants of Zela (for thus the place is called) continue to celebrate to the present day. It is a small city belonging for the most part to the temple slaves.”

73. Although in Chorasmia there is no architectonic standard and the local variation seems the norm.

74. Tolstov 1958: 75; Rapoport 1971: 70; Mambetullaev 1990, 2011. According to Mambetullaev (2011), this dating is relative to the function of the structure as fire temple in its initial and main stage.

75. Mambetullaev 2011. It could have been a “fire holder” but it is very difficult to support this theory with the published data available. The presence of ossuary burials in the site is connected with later post-abandonment (unclear) phases of the structure. Cf. the Aibuiir-kala platform with the III–VI centuries A.D. Sogdian (Bukhara) site of Setalak 1 (Sulejmanov 2000: 258–59).

76. Betts et al. 2009; Tolstov 1962: 104. The presence of Antique pottery types on the site surface is confirmed by recent surveys (KAE).

77. Unexcavated, difficult to detect on the terrain and not visible from recent satellite images due to the poor preservation state of the area. See, Tolstov 1948a: p. 112, fig. 47; 1948b: p. 113, fig. 25. Other Chorasmian sites characterised by mud-brick ramps are Late Antique Ayaz-kala 2 and Dzhil'd'ik-kala (I–IV A.D.—Tolstov 1948a: fig. 56). If the latter is probably only a stronghold dissimilar to the Central Monument of Akchakhan-kala, on the other hand the first site presents a very steep ramp that connects a “lower palace” with an isolated high-ground place, close to the sites of Ayaz-kala 1 (a *gorodishche* with no inner structures), and Ayaz-kala 3 (a *gorodishche* with an administrative unit—on the excavation of this site, see Bolelov 1998). The “lower palace” presents a central chamber filled with layers of sand and bricks that closely recalls the deconsecration of the Tash-k'irman Fire Temple (Betts and Minardi personal observation).

78. Itina 1991; Levina 2001; for a recent analysis, see Bongard-Levin and Košelenko 2005 and Minardi forthcoming: 103–12.

79. The “Western Building” had two construction stages: the earliest one characterized by the use of *pakhsa* blocks for the foundations of the walls completed at a certain height by mud-bricks (cf. Koi-Krylgan-kala, Akchakhan-kala, Kalaly-g̃yr 1, etc.); the second characterised instead by the use of mud-bricks directly laid on a pebble substructure.

80. On the Mausoleum, see Bernard 1972; on Dal'verzintepe, Pugachenkova 1978: 97–113; see also Grenet 1984: 96–98 who compared the two structures (with reference to Bernard 1980). Note that the vaulted structure of Hellenistic Ai-Khanoum are not “pitched,” while the Dal'verzintepe ones are so, likewise the vaults of Chorasmia including those of Elkharas (*supra* note 32).

81. See Minardi 2013 and forthcoming.

82. See for instance Downey's catalogue of religious edifices (Downey 1988). On the Mesopotamian elements in Bactrian architecture, see Bernard 1976; on the Iranian religious cultic elements in Central Asia and Iran during the Hellenistic period, see Martinez-Sève forthcoming with references.

83. Schlumberger, Le Berre and Fussman 1983: 92. Cf. *supra* note 67.
84. Rapin 1992.
85. If we want to include in this pattern Building V of the external compound of Toprak-kala (Rapport 1993).
86. Arnaud 1997.
87. Betts et al. 2009.
88. Cf. Boyce 1975: 457.
89. Zoroastrian ceremonies such as the *Nowrūz* (the New Year festival) that might be related to the Akchakhan-kala wall paintings (the "procession," Kidd et al. 2008) and to the spatial conception of the Ceremonial Complex as hinted by Grenet (2010). On the Zoroastrian Chorasmian festivals, see Biruni (by Sachau): 223–30.

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