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Types of town planning in ancient Iranian cities : new considerations

Frantz Grenet

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THE HISTORY AND CULTURE OF
IRAN AND CENTRAL ASIA

The History and Culture of Iran and Central Asia

From the Pre-Islamic to the Islamic Period

EDITED BY
D. G. Tor and Minoru Inaba

University of Notre Dame Press

Notre Dame, Indiana

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C O N T E N T S

List of Figures	vii
Acknowledgments	xiii
CHAPTER 1. The Enduring Significance of the Iranian World in the First Millennium CE: Transformation and Continuity <i>D. G. Tor</i>	1
Part I. Iranian Central Asia in Late Antiquity	
CHAPTER 2. Types of Town Planning in Ancient Iranian Cities: New Considerations <i>Frantz Grenet</i>	11
CHAPTER 3. The Proto-Sogdian Inscriptions of Kultobe: New Fragments and New Reconstructions <i>Nicholas Sims-Williams</i>	41
CHAPTER 4. <i>Xian</i> Temples of the Sogdian Colonies in China: A Study Based on Archaeological Material <i>Etsuko Kageyama</i>	57
CHAPTER 5. Three Scenarios for the Historical Background of the Xi'an Sino-Pahlavi Inscription: Post-Sasanian Zoroastrian Traders? <i>Yutaka Yoshida</i>	73

Part II. From the Pre-Islamic to the Islamic

CHAPTER 6. The Arab Conquest and the Collapse of the Sogdian Civilization <i>Michael Shenkar</i>	95
CHAPTER 7. Central Asia in the Mid-Eighth Century: Wukong's Itinerary toward India <i>Minoru Inaba</i>	125
CHAPTER 8. Evolution of the Habitat in Paykend <i>Rocco Rante</i>	151
CHAPTER 9. Notes on Islamization Narratives in the <i>Faḡā'il-i Balkh</i> <i>Arezou Azad</i>	189

Part III. The Transformation of the Pre-Islamic Past

CHAPTER 10. The New Garden of the Amīr: Sāmānid Land Development at the Fringes of the Bukhārā Oasis <i>Sören Stark</i>	219
CHAPTER 11. Al-Tha'ālibī's Iranian Past: Assimilation and Aesthetics <i>Louise Marlow</i>	251
CHAPTER 12. Representations of the Pre-Islamic Past in Early Persian Court Poetry: The Art of Celebration <i>Gabrielle van den Berg</i>	279
CHAPTER 13. From Turkistan to Tibet: The Qarakhanids and the Tsongkha Kingdom <i>Dilnoza Duturaeva</i>	305
Contributors	329
Index	335

CHAPTER 2

Types of Town Planning
in Ancient Iranian Cities

New Considerations

FRANTZ GRENET

Considerable progress has been made recently in the knowledge and interpretation of town planning in Iran and Central Asia over the course of the centuries, partly from large-scale archaeological excavations, partly from more sophisticated technologies of geomagnetic detection and remote sensing. In order to fully appreciate this progress, it will be necessary to consider also periods earlier than the chronological limits of the present volume. I will therefore survey the fundamental characteristics of towns in the Iranian cultural world, from Achaemenid times through the emergence of the classical type of Iranian towns, which appeared in the medieval period and lasted, in some areas, almost to the present day.

THE LOOSE ACHAEMENID IMPERIAL
AND PROVINCIAL CAPITALS

As the evidence accumulates, it appears more and more clearly that the Achaemenid towns both in Iran proper and in Iranian Central Asia can be separated into two broad categories.

One is represented by political centers that appear as a loose distribution of official buildings. I quote here Rémy Boucharlat: “A diffused, unfortified urban structure, replaces the Mesopotamian model of the walled city hierarchically organized around the zone of the monuments of political and/or religious power.”¹ On the other hand, we already notice in this period, and increasingly more so in the subsequent ones, small or middle-size fortified settlements also established by the state but that look like compact clusters of barracks. Neither variant really calls to mind what in our Western education we are used to calling a “town,” even less so a “city” or a *polis*, nor do these resemble the image we have of the later medieval towns in these same areas. For the necessity of demonstration, I shall select the most representative examples and try to simplify the evidence. There are hybrid or transitional cases, which I shall also address in this survey.

Concerning the Achaemenid political centers, the main focus of attention is of course Persepolis (fig. 2.1). Was the “town” mentioned in Greek sources under the names “Parsa” and “Persepolis” limited to the palace complex on the Terrace, or did it extend on the plain of the Marv Dasht? Recent geomagnetic surveys carried out by Sébastien Gondet,² and limited excavations by Chaverdi Askari and Pierfrancesco Callieri,³ have confirmed what Giuseppe and Ann Tilia had already suspected thirty years ago: there are several clusters of habitations far and wide in the plain, up to seven kilometers west of the Terrace, and one, at least, situated under present Bagh-e Firuzi, included monumental buildings with stone columns. So far there is no evidence of a fortification wall in the plain. The “triple wall” mentioned by Diodorus Siculus (17.71) might refer only to the outer walls of the Apadana, the Terrace, and the Kuh-i Rahmat, in which case the outer enclosure would have encompassed the two others only partly. This question remains, however, disputed.

The picture is richer for Pasargadae, as here the outer limits appear more or less, but also for the main unfortified (fig. 2.2). The inner space is structured almost everywhere by irrigated rectangular gardens in which parade buildings, some with columns, are distributed loosely but in strict accordance with the orientation of the gardens.⁴ It is not at all certain that any of these buildings was permanently inhabited. There are also some isolated monumental structures, probably religious, but the only one clearly identified is the Tomb of Cyrus. The northern part of the site presents a

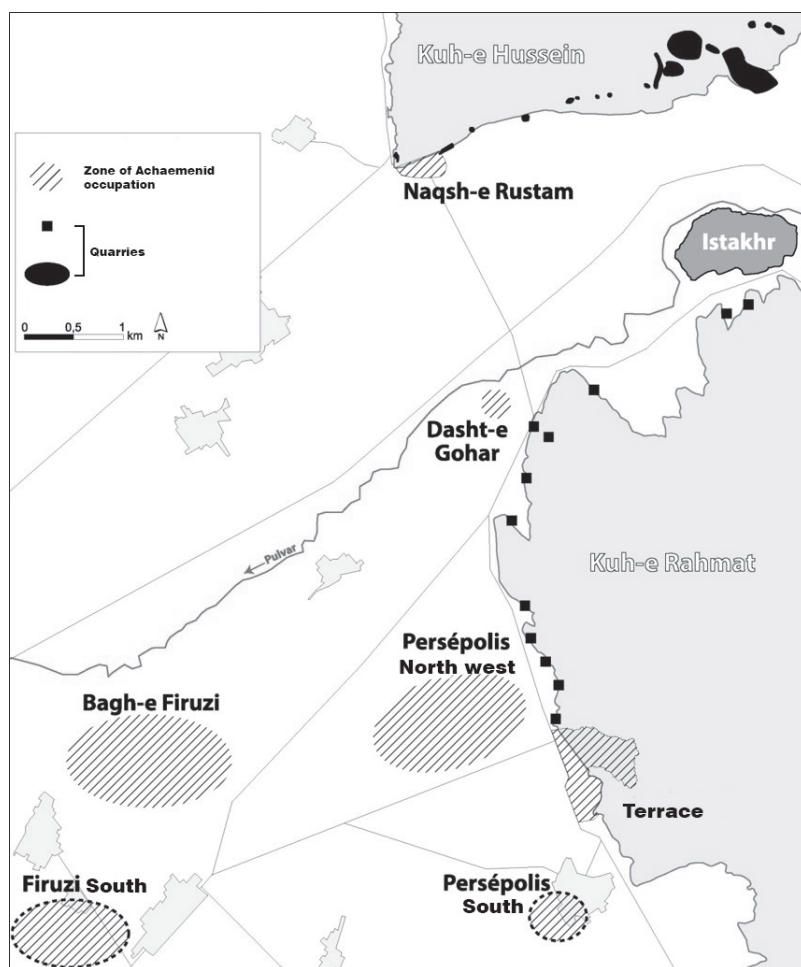


Figure 2.1. Persepolis as a multicentered settlement (© Rémy Boucharlat).

different character, with a monumental stone platform (the Tall-i Takht), unfinished and of uncertain destination, and a separate enclosure where air photographs have recently revealed a cluster of monocellular dwellings organized according to an orthogonal grid.⁵ They are tentatively identified as a garrison, for which a post-Achaemenid date is not excluded. A fortification wall, not excavated but surveyed to the north and west of this northern part of the city, and apparently not existing elsewhere, could also indicate a recentering of the site after the Macedonian conquest, with a

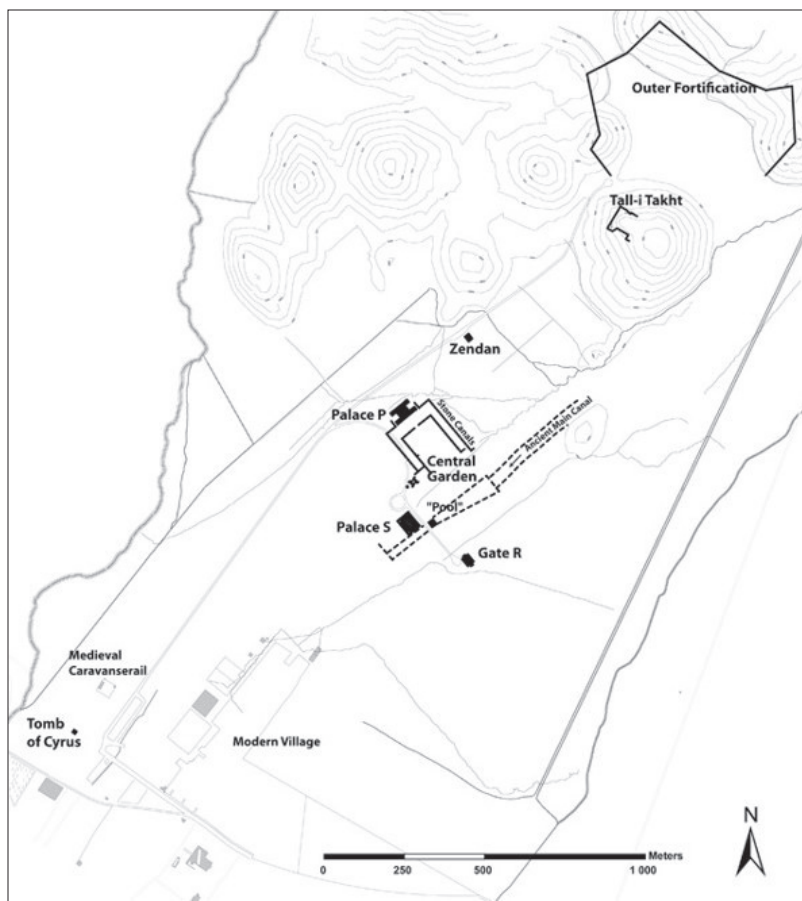


Figure 2.2. Pasargadae (© Sébastien Gondet).

different type of occupation. Future excavations might provide some further clues. For our present purpose, it is important to note a combination of the two urbanistic types I have proposed to define at the onset.⁶

Moving from imperial capitals to centers of satrapies in the East, we first encounter Dahaneh-i Ghulaman, probably to be identified with Zarin, the main seat of Achaemenid power in Drangiana-Sistan (fig. 2.3).⁷ Twenty-seven monumental buildings, built of baked and mud bricks, most of them square with a central courtyard and considered either religious or palatial, dominate the landscape along a one-kilometer canal linking

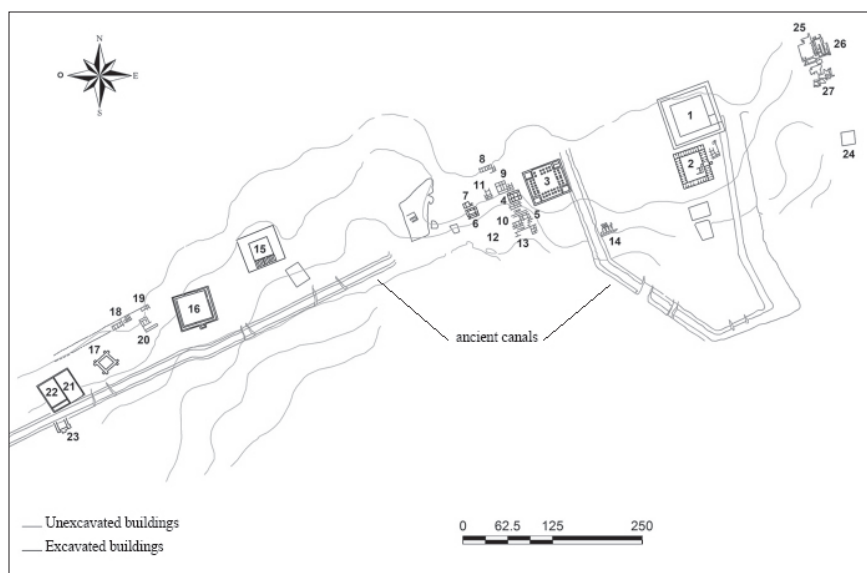


Figure 2.3. Dahaneh-i Ghulaman (© Arta 2012.001).

two large pools, with modest mud-brick houses in between, also square in plan with a small courtyard. Two kilometers more to the south another pavilion has recently been discovered by teledetection. It is the largest of them all and the most similar to palatial structures known at Pasargadae and Persepolis (four square towers at the angles, four porticos in between). Nowhere on the site has evidence of a fortification wall been found.

Contrary to the open imperial cities we have just examined, all those situated in the northeastern satrapies were walled in. A possible reason for this difference is that these areas were on the steppe frontier or not remote from it, while capitals in the heartland of the empire were not expected ever to be attacked. Balkh (Bactra) was certainly the main Achaemenid stronghold north of the Hindukush, but at the moment little is known of the Achaemenid period, except that the town or part of it was set in an oval fortification (ca. 100 ha).⁸ To the north and west of Balkh other “towns” with a very regular circular shape and regularly spaced towers, mainly Altyn-dil’iar-tepe (15 ha), Emshi-tepe (18 ha),⁹ Bargah (8.5 ha), Dzhagat-tepe,¹⁰ have not been excavated but seem not to have been densely built.

Twenty kilometers to the south of Balkh, the recently discovered site of Cheshme Shafa is more promising, as occupation ceased after

the Greek conquest.¹¹ It comprises two areas, each with its own rampart. One lies along the river and includes a rectangular settlement, geometrically planned, still unexcavated; the teledetection suggests a large central building and wide open spaces. The second one is on the hill, with a religious structure from which a monumental stone fire altar survives, the only one known anywhere in the Achaemenid Empire.

Sogdiana does not have for this period regular circular enclosures, perhaps because of the lack of broad even surfaces between the river and torrent beds. Kyzyltepa, the only “urban” Achaemenid site in southern Sogdiana substantially explored so far (more by remote sensing than by excavations) has an irregularly shaped enclosure, a fire temple subsequently enclosed in a citadel, and the rest appears not densely built.¹² Koktepe, the site that preceded Samarkand thirty kilometers to the north, is typically polynuclear, with two separate enclosures inside the circuit wall (fig. 2.4). The central enclosure (“A” on the plan), with towers, probably sheltered one or several religious buildings; the other one (“B”),

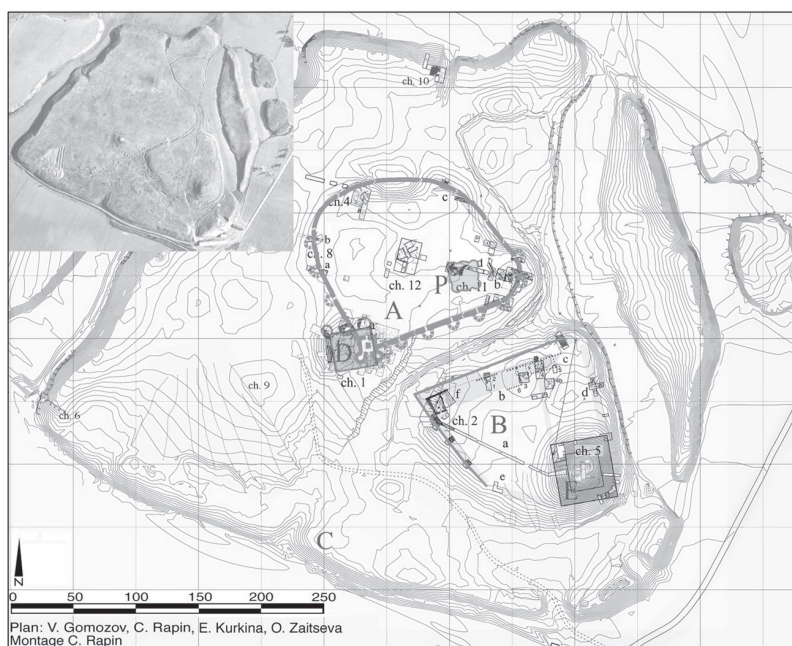


Figure 2.4. Koktepe (© Claude Rapin/MAFOUZ de Sogdiane).

without towers, was probably dedicated to storage and administrative buildings.¹³ In a later phase, but still in the Achaemenid period, each enclosure was replaced by a structure set on a pyramidal basement. There is very little evidence for ordinary dwellings at that time, but there is for the pre-Achaemenid period. In the plain, an advanced “shield wall” probably existed only on the northern side, the one exposed to attacks.

As for Samarkand, there is little information for the Achaemenid period, except for the circuit wall that dates from the very foundation of the town, probably under Darius I (r. 522–486 BCE), and the citadel on an artificial platform in the northern part (fig. 2.5).¹⁴ As at Koktepe, the earliest circuit wall was massive—six meters thick—and built by an accumulation of rather irregular raw-earth bricks without the use of any frames,



Figure 2.5. Afrasiab (ancient Samarkand), topographic plan of 1885 supplemented by the results of the excavations (© Claude Rapin/MAFOUZ de Sogdiane).

which is typical for nonskilled mass labor. On both sites, each brick, however, carried a finger-made mark, with only one mark per section. This indicates brigades working simultaneously on respective assigned sections of the wall, and having to justify a certain amount of production. Most probably the workers in these brigades were gathered from all the villages in the plain. To what extent this system implied sheer constraint or, on the contrary, labor voluntarily invested on an equalitarian basis (also justifying control marks) in a potential shelter for people and flocks in times of danger, is, of course, impossible to determine. All we can say is that, as at Koktepe, the fortified area, here 220 hectares, was obviously not densely built. The only excavated building dating from the Greek period is a huge granary (40 x 40 m), suitable for sustaining a siege. The layout of the water system supply on the plateau, with three fan-shaped canal branches and many basins, was never compatible with any general town planning. In fact, compact orthogonal dwelling quarters are not documented before the seventh century CE and, because of the many basins, they occupied limited surfaces and were not contiguous to each other.¹⁵

THE NON-HIPPODAMIAN HELLENISTIC CITIES OF CENTRAL ASIA

Because of these constraints, it is no surprise that Hippodamian town planning was not introduced in Samarkand during the Greek period, but its absence is also remarkable at Ai Khanum, the capital of Eucratides (ca. 171–145 BCE) (fig. 2.6), and also at Old Nisa, the very Hellenized capital built by his rival, the Parthian king Mithradates I (165–132 BCE) (fig. 2.7). I shall deal briefly with these sites, which are very well known, and shall focus on their common features, which are quite significant despite the differences in political background and scale (Ai Khanum intramuros, ca. 135 ha, was nine times larger than Old Nisa, ca. 15 ha).¹⁶ In both cases a considerable proportion of the built space was allotted to very imposing buildings, both political and religious; even the storage accommodation, the “Treasures,” were monumental and directly linked with the needs of the palaces. In the case of Nisa, one even wonders whether there were permanent inhabitants at all, except for some servants and perhaps a small garrison.¹⁷ Here the only recognizable

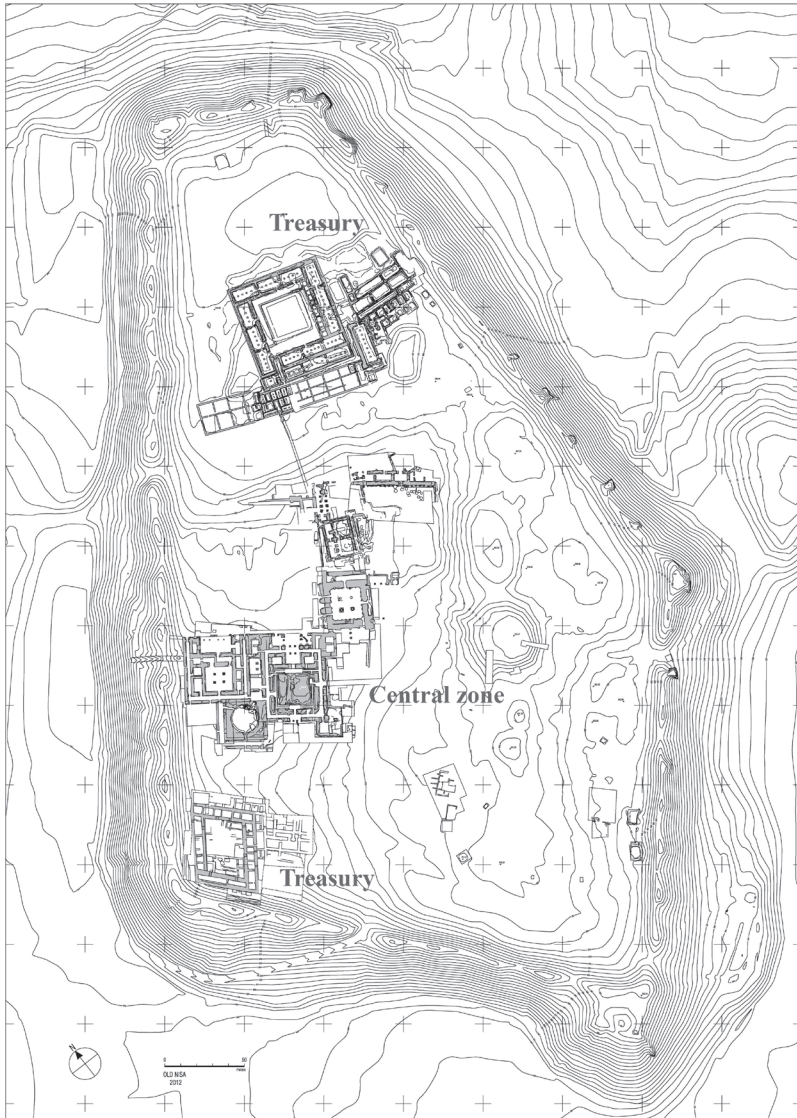


Figure 2.7. Old Nisa (© Archive of CRAST—Centro Ricerche Archeologiche e Scavi di Torino).

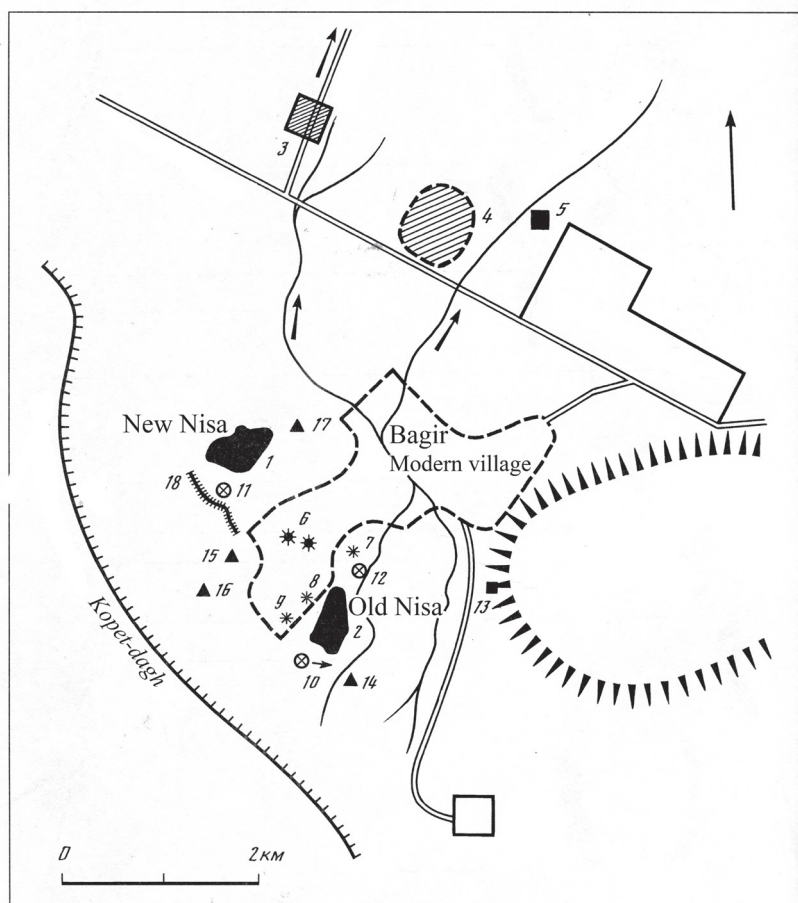


Figure 2.8. Old and New Nisa in their context; adapted from V. N. Pilipko, *Staraiia Nisa* (Moscow, 2001), fig. 99.

the urban organism. At Nisa, the excavated city was in fact the royal enclosure.¹⁸ The “real” town was the little explored, preexisting site of New Nisa, located a short distance away, with various monuments and dwellings scattered in between (fig. 2.8). At Ai Khanum the situation is quite comparable: the “suburb,” which extends between the Greek foundation and the preexisting round town, was densely occupied, but only a large house, a temple, and a mausoleum have been excavated in the southwestern sector (“A” on the plan), which Henri-Paul Francfort qualified as an “urban zone” in his survey report (fig. 2.9).¹⁹



Figure 2.9. Ai Khanum, survey of the suburb (adapted from Gardin 1998, fig. 3.4A).

To complete this survey of “loosely built” political centers, it is now necessary to add Akchakhan-kala, the first capital of Khorezm, currently being excavated by an Uzbek-Australian team (fig. 2.10). It was probably founded in the early second century BCE, and remained occupied for four centuries. What the outer rampart actually enclosed is not known, but surface observation does not give an impression of dense occupation. The inner enclosure included a huge monumental complex, which is

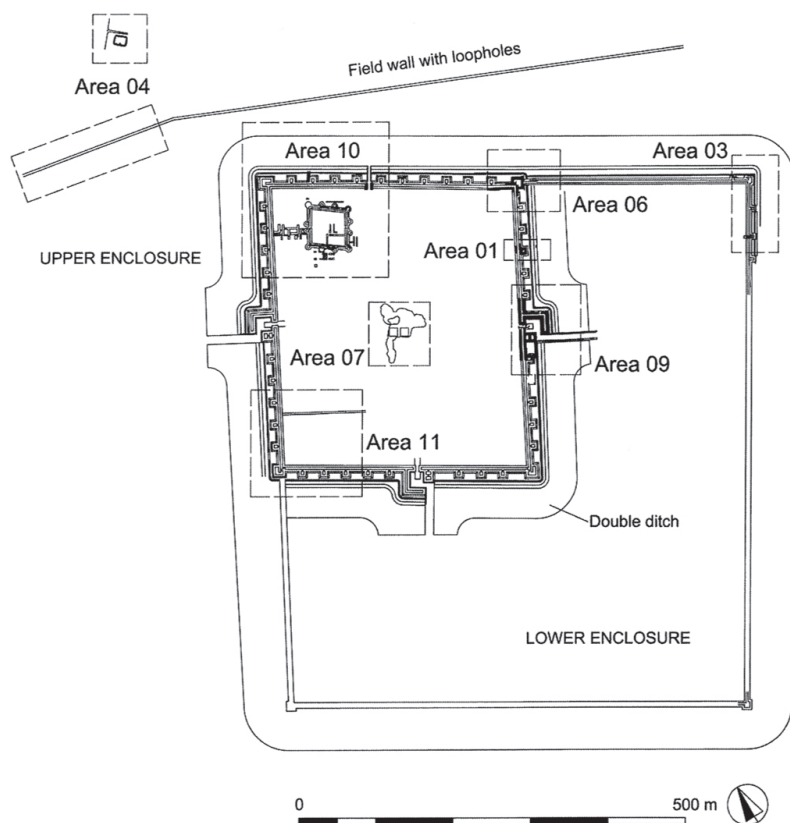


Figure 2.10. Akchakhan-kala (© Alison Betts).

becoming famous for its wall paintings, but was probably occupied only during royal audiences. The center of the enclosure is marked by a raised monument, probably religious. The only large dwellings so far identified are extramuros. A “shield-wall” protected the oasis to the north.²⁰

For the early Parthian period, this picture can be completed by Hekatompylos, the site now known at Shahr-i Qumis, capital of the satrapy of Comisene, then one of the early capitals of the Arsacids after they had set foot on the Iranian plateau. According to preliminary archaeological exploration conducted in the 1960s, it appears as a loose cluster of small sites.²¹

Taken together, and despite their differences, these ten imperial or subimperial centers dating from the Achaemenid and Hellenistic periods

present a picture substantially similar. In no case can we detect the criteria commonly associated with the concept of a town, and which had been largely present in the ancient Middle East: density of occupation, complexity of functions, planned or spontaneous zoning between these functions, and the associated social strata.

COMPACT “BARRACK SETTLEMENTS”

This picture, however, does not include the totality of the urban phenomenon. Middle-size or small fortified settlements of a completely different type are documented as existing at the same time, and continue to appear later. They, too, are not easily definable as “towns,” and in fact they look more like barrack clusters.

At Pasargadae we have already come across this type of plan inside the small fortified area. Khorezm offers a remarkable example contemporary with Akchakhan-kala: Dzhanbas-kala, one of the first urban sites surveyed, was partly excavated by Sergei Tolstov already before World War II (fig. 2.11).²² It is a small site, 3.5 hectares, situated at the

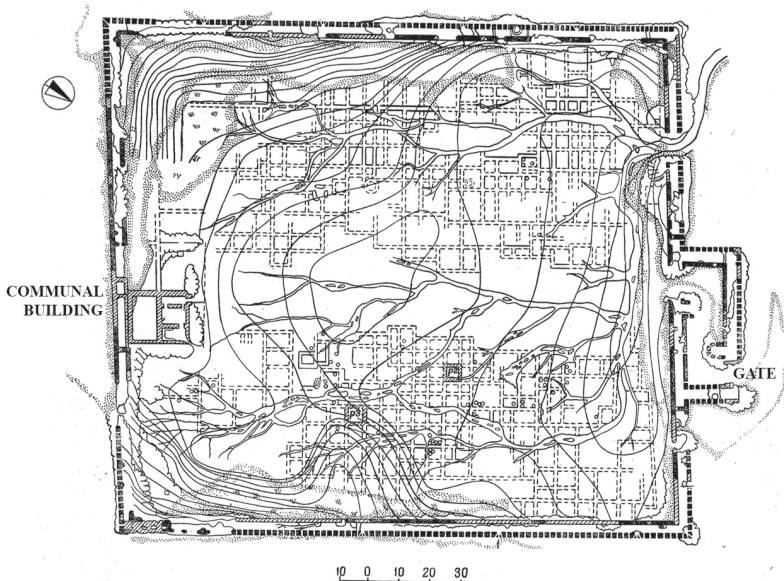


Figure 2.11. Dzhanbas-kala (adapted from Tolstov 1948, fig. 29).

northeastern edge of Khorezm, with a sophisticated rampart fitted everywhere with triple arrowheads. On both sides of a wide axial street the space is entirely occupied by compact dwellings. There is only one communal building at the southern end of the street, which Tolstov, probably wrongly, identified as a fire temple. Relying on surface observation, he assumed that there was no street network and all dwellings were monocellular, about two hundred on each side. He portrayed Dzhanbas-kala as an emblematic expression of the ancient Chorasmian urban social structure in the “slave-owning” period, which he considered was everywhere articulated on a pair of matriarchal communities. Such conclusions are hardly tenable today. In the light of acquired experience and knowledge, Dzhanbas-kala appears, more simply, as one of a chain of garrison towns established by the central power along the steppe front.

Such is indeed the obvious interpretation of what is today the best-studied Kushan urban site: Kampyr-tepe, on the northern bank of the Oxus River (fig. 2.12).²³ This small Greek settlement received a citadel in the pre-Kushan period of the *yabghus*, and a lower enclosure probably at the end of the first century CE. Half a century later, the southern half collapsed into the river and the site was abandoned, offering to our colleagues



Figure 2.12. Kampyr-tepe, remaining part (adapted from Bolelov 2013, fig. 1).



Figure 2.13. Kamyrt-tepe, part of lower town; adapted from *Materialy Tokharistanskoi Èkspeditsii*, Vol. 7 (Tashkent, 2009), fig. 37.

in Tashkent a unique opportunity to study in great detail a well-defined period of Kushan urban life. The entire built space, both in the citadel and in the lower town, is occupied by contiguous small residential units, each with two or three rooms (fig. 2.13). Several such units share a courtyard, a hearth, and a kitchen. The urban plan is structured radially by narrow lanes, evenly spaced (17 to 19 m), the purpose of which is to provide direct access to the towers. These lanes in fact are not the limits of the neighborhood units, but their axis. No temple has been found, but it may have stood near the river, in the now destroyed part. No dwelling appears richer than any other, except one in the citadel provided with a slightly raised terrace, probably the house of the commanding officer. The absence of any craftsmen's area, the mediocre artistic level of the objects, the total lack of wall paintings, the presence of many weapons and armor elements, all confirm the impression left by the architecture: Kamyrt-tepe was a planned settlement established at a strategic crossing, on the most direct road between Balkh and its military camp at Zadiyan to the south and the "Iron Gates"

(the border with Sogdiana) to the north. Ramparts were built by Kushan military engineers applying strict models and even construction modules that are repeated at other contemporary sites. Contrary to the apparently nonfunctional character of Kushan temple fortifications, those at Kampyr-tepe and other military sites were carefully designed to ensure maximal cover of the approaches. The entire inner space was allotted to a modest population, most probably subject to military service.

COMBINED TYPES

These firmly based conclusions of the Kampyr-tepe excavators allow the reopening of the cases of some other sites.

One of them, also in Kushan Bactria, is Dil'berdzhin, at the north-western edge of the Balkh oasis, excavated by a Soviet team in the 1970s (fig. 2.14).²⁴ At the round citadel, the attention of the excavators was concentrated more on the rampart than on the inner constructions, of which only a general plan was published, with hardly any description.²⁵ Now that Kampyr-tepe is known, one can recognize the same type of blocks, separated or rather articulated by narrow lanes and each containing several small units. At the same time, however, Dil'berdzhin is a far more ample and complex structure than Kampyr-tepe. It appears to combine the "barrack cluster" type, here limited to the citadel, and the "diffused monumental" type inherited from earlier periods and which seems to dominate the entire lower enclosure and the suburb, with no visible general town planning. The main temple in fact has an enclosure of its own. There is no clear evidence for a bazaar or for craftsmen areas. The only important house excavated, probably to be identified as the local governor's residence considering its dimensions, is in the southern suburb.²⁶

Another case that can now be freshly examined in the light of Kampyr-tepe is Ecbatana, partly uncovered in the 1990s at Tappeh Hegmataneh by Sarrāf and studied by Massoud Azarnoush, with stimulating remarks by Rémy Boucharlat (fig. 2.15).²⁷ At the time of the excavations, the extremely compact, and at the same time geometrical, plan came as a surprise, for it was not analogous to what was previously known in any ancient Iranian towns. The date was also uncertain, but a good case has now been made for the early Parthian period. In a more standardized way,

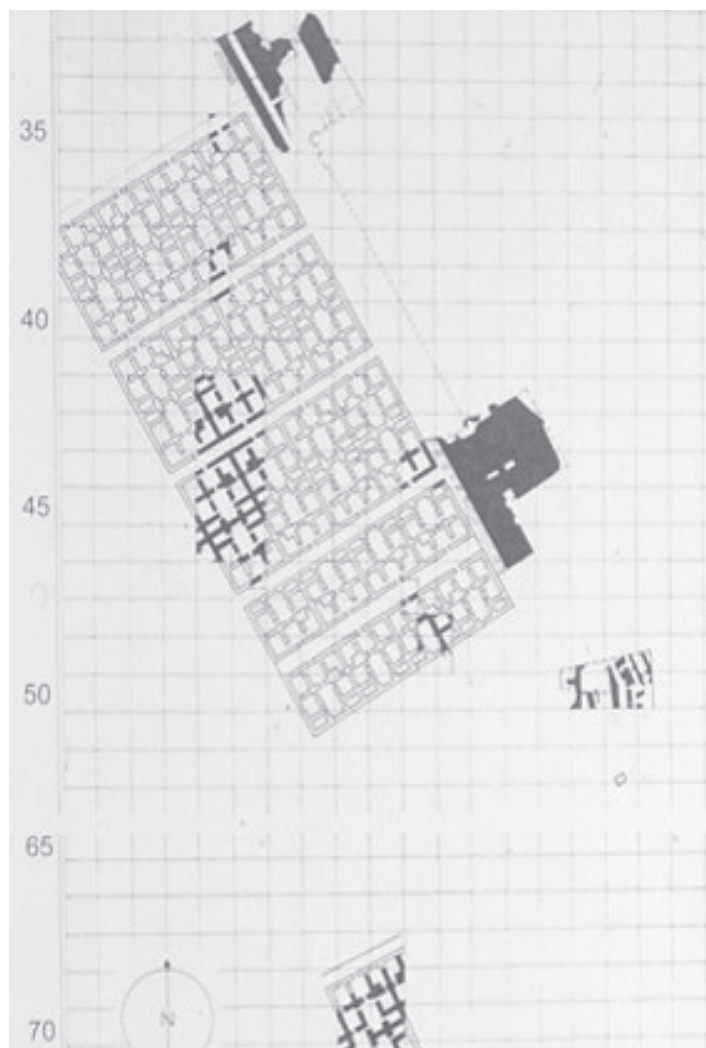


Figure 2.15. Tappeh Hegmataneh (ancient Ecbatana), excavated sector
(© Rémy Boucharlat).

bases exhibited in the local museum prove the existence of palaces or temples, probably both.

A last interesting case of a juxtaposed aristocratic and soldier-class settlement deserves examination: Toprak-kala, the town that in the second century CE succeeded Akchakhan-kala as the seat of the kings of

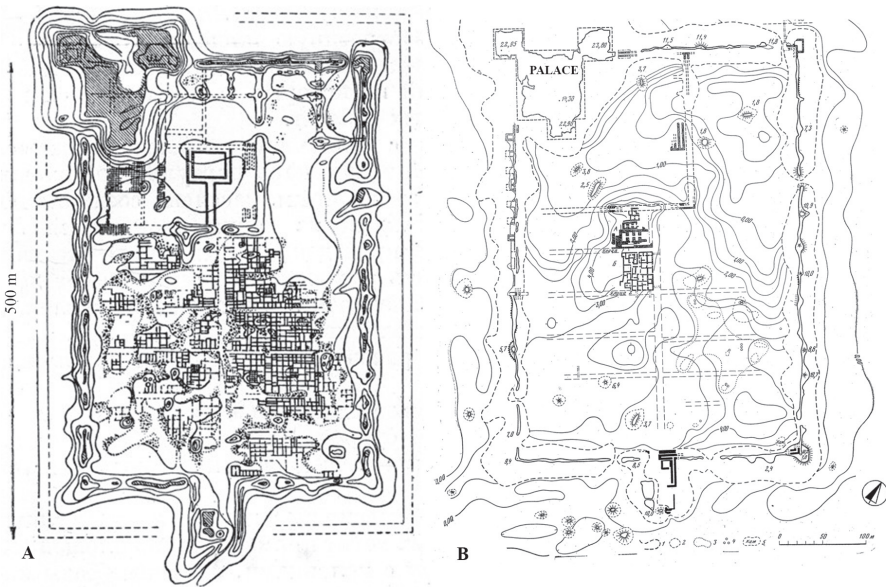


Figure 2.16. (A) Toprak-kala, surface survey; from S. P. Tolstov, *Po sledam drevnekhorezmiiskoi tsivilizatsii* (Moskva, 1948), fig. 43/1; (B) plan of excavated parts, palace not included (Nerazik and Rapoport 1981, fig. 2).

Khorezm; the “real” capital was probably on the bank of the Amu Darya (fig. 2.16).²⁸ The walled city comprises twelve identical blocks containing small units, and in the northern part a basin, a fire temple, and a monumental palace. In fact, the survey plan published in 1948 gives a better idea of the extreme density of the dwelling blocks. According to the excavators, they were inhabited by people directly dependent on the palace; the archives found in the palace document households owning a large number of slaves, probably subject to agricultural duty and military levy. But in order to fully appreciate the urban structure, we have to take into account the deployment of aristocratic life in the extramuros structures built at the same time and strictly aligned on the palace: a racecourse, and a *chahār-bāq* (quadripartite garden) containing fourteen pavilions, some of them small palaces and one possibly a temple, each raised on its own platform (fig. 2.17).²⁹ In spite of the distance and the chronological gap of seven centuries, we are here closer to Pasargadae than to any other site.

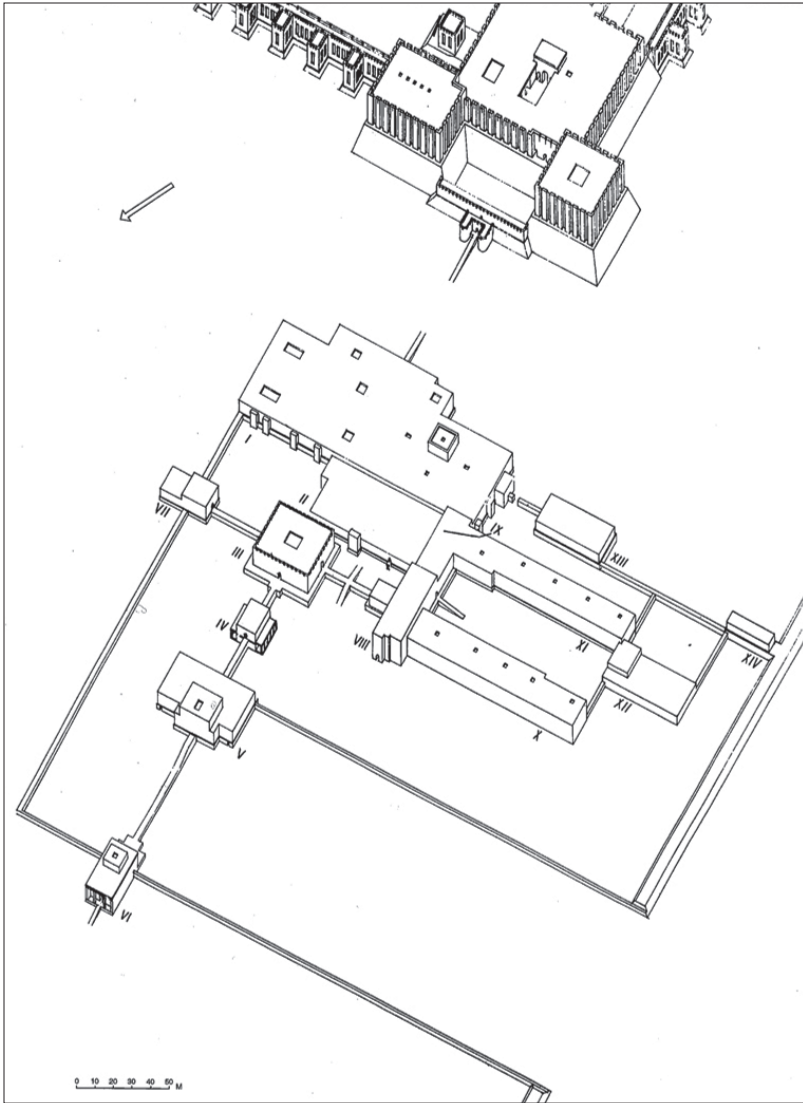


Figure 2.17. Toprak-kala, palace intramuros (top) and buildings in *chahār-bāq*, reconstruction (Rapoport 1996, fig. 25).

NEW URBAN TYPES IN THE FIFTH
AND SIXTH CENTURIES

I shall now present in very broad outlines the new features that appear in the wave of the urban foundations of the fifth and sixth centuries. Such new features probably occurred in Sasanian foundations, but archaeological evidence is still lacking. The phenomenon is better documented in Central Asia, outside the Sasanian borders, especially in Sogdiana.

To be succinct, at that time the era of oversize imperial cities is over. Those that subsist are either floating in their old walls, such as Merv and Balkh, or have shrunk into new inner walls, such as Samarkand. The new urban foundations do not exceed ten hectares in the beginning.³⁰ The two best-studied examples, Paykand in the Bukhara oasis³¹ and especially Panjikent to the east of Samarkand (fig. 2.18),³² have a lower town built beside a preexisting citadel and a geometrical grid of streets. This was already observed in the previous “barrack settlements” and even more

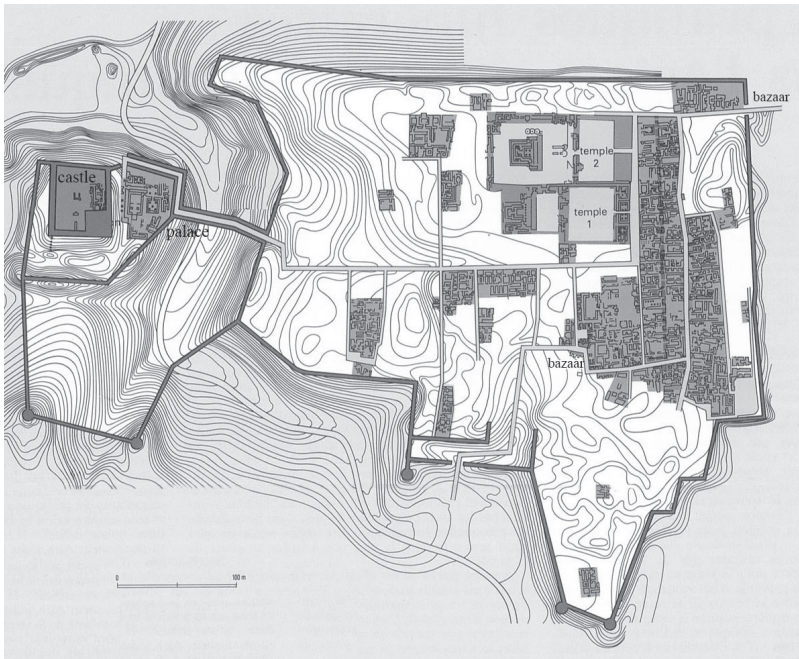


Figure 2.18. Panjikent, plan with attempted rendering of the zoning; from F. Grenet, *Le Grand Atlas de l'Archéologie* (Paris: Encyclopaedia Universalis, 1985), 235.

at Toprak-kala, but there is a fundamental change in the allotment of the blocks: the uniform “rabbit hutches” of the previous periods give way to proper dwellings belonging to various social strata. At Panjikent an evolution can be observed in the sector where the entire house stratification has been preserved: the blocks were initially assigned to self-contained, two-story “cottages” (in Russian *usadby*) provided with thick outer walls and leaving unbuilt space between them.³³ This calls to mind how the historian Narshakhi describes the beginning of urban settlements in the Bukhara oasis: “They first set up tents and *khargāh* (wooden-framed pavilions) where they dwelled, but in time more people assembled and they erected buildings.”³⁴ In subsequent phases at Panjikent, these cottages become sophisticated houses adjoining each other. A general trend toward social upgrading can be observed, with rich houses emulating aristocratic castles, and even the craftsmen’s houses containing wall painting. Military barracks, when they exist, are now confined to narrow stretches on the inner side of the citadel wall (at Paykand)³⁵ or between two walls (at Panjikent, with the circulation provided by ladders; fig. 2.19).³⁶ A proper

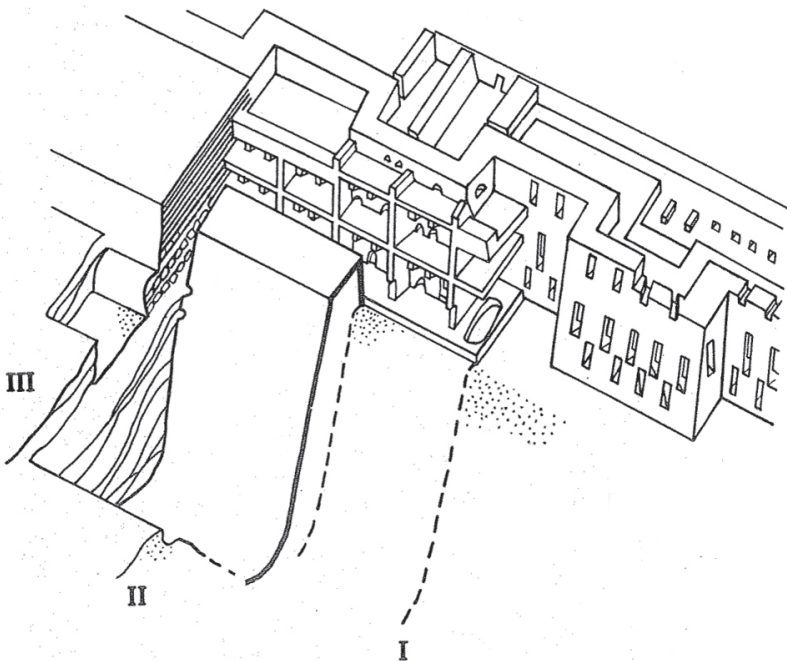


Figure 2.19. Panjikent, military barracks in disused city wall (Semenov 1996, fig. 11).

functional zoning appears, with two well-defined bazaars at Panjikent, one intramuros and one at a city gate.

The medieval city of Iran and Central Asia, with its *mahallas* (closed dwelling quarters), its ranges of shops on the ground floor of rich houses, its tendency to grow in height, its lanes spanned by private inhabited bridges, is already on the way.³⁷ In some places this model subsisted until quite recently, at least morphologically; the best preserved specimen was perhaps the old center of Kashgar, until its destruction a few years ago.

NOTES

1. Rémy Boucharlat, “Mais où sont les villes achéménides d’Iran?,” paper given at the XIXe Journée Monde Iranien, Paris, March 17, 2017 (quoted with the author’s permission). (The bibliography I give here is very selective, with preference given to “durable” or recent contributions. Illustrations have been adapted by François Ory, CNRS/ENS, UMR AOrOC.)

2. Boucharlat, De Schacht, and Gondet 2012.

3. Askari and Callieri 2017.

4. Stronach 1978.

5. Benech, Boucharlat, and Gondet 2012.

6. I expressed my thanks to Sébastien Gondet for the rich information and stimulating discussion when I visited the site in October 2017 together with Samra Azarnouche. See now Gondet 2018.

7. Main report of the Italian excavations in the 1960s: Scerrato 1966. New research by geomagnetic procedures: Mohammadkhani 2012 (the small houses that had been excavated in the 1960s but not published at the time are illustrated in this article, fig. 5).

8. See, lastly, Bendezu-Sarmiento 2018. This was also the case in the earliest site of Merv (Erk-kala); here too the inner structuration of the city in the Achaemenid period is unknown, except for the citadel, including a monumental dwelling of uncertain function (Usmanova 1963).

9. Sarianidi and Kruglikova 1976, 12, fig. 10; 18, fig. 14. Contrary to the other round sites, Emshi-tepe was occupied until the Kushano-Sasanian period; in the pre-Kushan period it was probably the seat of the local dynasty buried at Tilia-tepe.

10. Dimensions not published. For Bargah, see Besenval and Marquis 2008, air photograph fig. 10.

11. Besenval and Marquis 2008, 982–88; Bendezu-Sarmiento 2018.

12. Wu Xin 2018.

13. Rapin and Khasanov 2016 give an overall and up-to-date survey of questions of urban structure in Achaemenid and Hellenistic Sogdiana (Koktepe, Afrasiab), adducing comparisons with Ai Khanum and Nisa. For Koktepe, see also Rapin 2017, 417–37, figs. 2–4.

14. Inevatkina 2002; Inevatkina 2010; Rapin 2010. For an attempt at estimating the task force and time according to various parameters, see Grenet 2004, 1052–54.

15. Fray et al. 2015, 53–55, figs. 1–3.

16. For Ai Khanum considered in an urbanistic perspective, see Bernard 1981; Grenet 2015b, 520–25; Martinez-Sève 2015. The comparison with Nisa is addressed more specifically in Grenet 2015a and Rapin 2016.

17. It is, however, possible that a small craftsmen population was accommodated in the “economic” treasury recently discovered to the south of the central cluster of monuments (Italian-Turkmen excavations, unpublished, seen in October 2016).

18. Pilipko 2008.

19. Henri-Paul Francfort, in Gardin 1998, 41–43, figs. 3–4.

20. The most up-to-date information and plans are in Betts et al. 2018. For an attempt at conceptualizing “towns” in Khorezm, see Negus Cleary 2013. At Merv, the fortified site was considerably enlarged in the Hellenistic period by the lower, quasi-square enclosure of Gyaur-kala, with its two main streets meeting at a right angle in the middle, but there is no evidence of a regular grid elsewhere, and the dwelling quarters occupied only one half of the inner surface, with much space left blank (Simpson 2014, 15–17).

21. Hansman and Stronach 1970.

22. Tolstov 1948, 88–100. Conclusions discussed in Grenet 2016, 514–15.

23. Bolelov 2013; Grenet 2015b, 526–29. For a general presentation, see now Bolelov 2018.

24. Kruglikova 1977; Grenet 2015b, 530–32; Lo Muzio 2017, 142–49.

25. Dolgorukov 1984, 75–89.

26. Dal’verzintepi also has a round citadel whose size (4 ha) corresponds to those at Kampyr-tepe and Dil’berdzhin, but it has almost not been excavated. It is also possible that already in the Hellenistic period Ai Khanum belonged to the combined type: very limited excavations in the upper town have evidenced—in addition to two lines of fortification, a citadel at the end, and an open air cultic podium—a cluster of small square rooms, which could have belonged to military barracks (Leriche 1986, 62–63, figs. 45, 46, photos 145, 149, 150).

27. Bucharlat 2012 (with a survey of the previous literature).

28. Nerazik and Rapoport 1981; Rapoport 1996; Grenet 2016, 521–23.

29. Rapoport 1996, 174–81.

30. Grenet 1996, with a comparison between the new urban foundations in Sogdiana and the Sasanian foundations with an orthogonal arrangement of blocks: Bishāpur, Gundishāpur, Ivān-i Kerkha (Bishāpur air photograph fig. 10 is erroneously attributed to Gundishāpur); add now Dasht Qal’eh behind the Gorgān wall (Sauer et

al. 2013, 382–406). Considering the already geometrical layout of Toprak-kala, which certainly predates the Sasanian period, I would be less assertive now concerning the influence of Sasanian urban foundations on the layout of the new Sogdian towns.

31. Semenov 1996, 98–150.

32. Marshak 1990; Raspopova 1990; Semenov 1996, 14–97; Marshak 2002, 1–18. The plan reproduced in this chapter, fig. 2.18, corresponds to the state of the excavations in 1984. Since then the excavations have progressed and blank spaces have been significantly filled, but this plan has been kept here because it gave an attempt at rendering the zoning, for which the information has not been significantly modified.

33. Raspopova 1990, 164–65, fig. 89a.

34. Translation in Frye 1954, 6–7.

35. Omel'chenko 2012; Omel'chenko 2015 (the barracks are linked with the reconstruction of the citadel under Sasanian occupation, third to fourth century).

36. Semenov 1996, 26–32, 167, 199–200 (Hephthalite period, sixth century).

37. For a recent survey of research on early Islamic cities in parts of Iran and Central Asia, see Durand-Guédy, Mottahedeh, and Paul 2020, which is more concerned, however, with socioeconomic structures than with the archaeologically documented morphological changes that are my main topic here.

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