

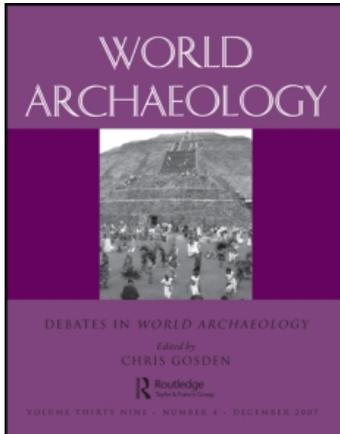
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Canals versus horses: political power in the oasis of Samarkand

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Canals versus horses: political power in the oasis of Samarkand

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Abstract

At the heart of Central Asia, the Middle Zeravshan Valley and the city of Samarkand are crisscrossed by a complex system of canals derived from the Zeravshan river (Fig. 1). In agreement with the traditional theories proposed by soviet scholars and defended, in another context, by Wittfogel, it is usually assumed that a strong, long-term association exists between the management of this irrigation system and some form of centralized political power system.

By adopting an integrated approach, we will examine an alternative history of the emergence and growth of Samarkand and the link between water management and socio-political power. In the first part we will focus on the archaeological evidence pertaining to the construction of the Dargom, the primary canal of Samarkand and suggest that it is not necessarily the result of a short-term (or fixed) master plan or linked to a strong central political power. In the second part we will consider the non-irrigated grasslands surrounding the oasis and show that the socio-political structures of the oasis cannot be understood without a more systemic approach.

The paper is based on the results of an ongoing project to survey the Middle Zeravshan Valley systematically initiated by the Institute of Archaeology of the Academy of Sciences of Uzbekistan in collaboration with various international teams (see acknowledgements).

Keywords

Samarkand; Middle Zeravshan Valley; Dargom canal; irrigation; nomads.

Introduction

Former Soviet Central Asia lies within the great semi-arid band of the northern hemisphere. Its agricultural potential therefore depends to a large extent on irrigation, derived from the rivers and streams descending from the mountains along its southern and south-eastern borders. It is often perceived, almost intuitively, to be an area comparable to

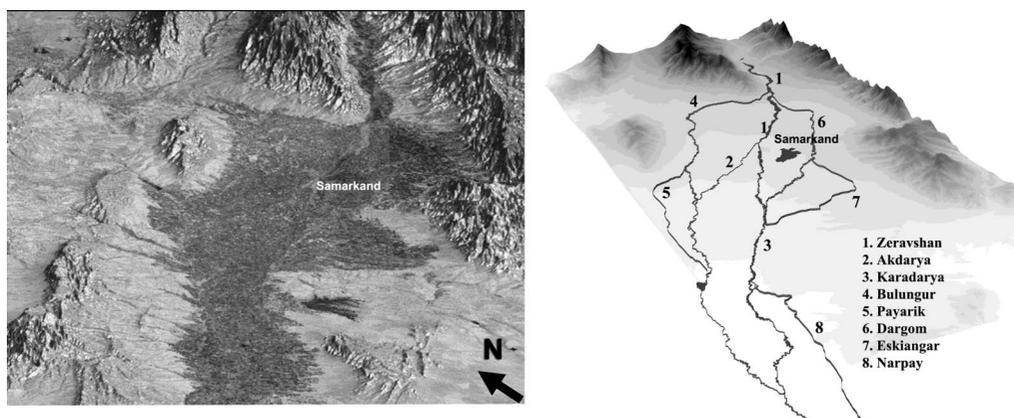


Figure 1 The Middle Zeravshan Valley (LANDSAT image), overlapped on a DEM showing the irrigated area (left). Simplified representation of the contemporary irrigation network (right).

the great ‘cradles of civilization’ and in particular to Mesopotamia, with the Amu Darya and Syr Darya rivers playing the role of the Tigris and Euphrates. Our knowledge of the area is based to a large extent on the results of the Central Asian school of Soviet archaeology, which was for decades one of the leading schools on a world-wide level (Trigger 1989: 323–9). The work of soviet archaeologists therefore shapes current research and notably that of the history of irrigation,¹ which was born with a multidisciplinary perspective from the very start.

The best example of their achievements is the Multidisciplinary Archaeological Expedition in Khorezm (XAKÈ) created in 1937 by S. P. Tolstov. The expedition aimed to reconstruct the long-term history of human occupation in the delta of the Amu Darya in all its complexity. It included historians and archaeologists of course, but also ethnologist, botanists, engineers, climatologists and artists among others. With direct access to the upper spheres of Soviet power, no expense was spared: apart from camels and tents the expedition was supplied with three aeroplanes to carry out systematic aerial photographs upon which the reconstruction of the settlement pattern and in particular of the irrigation system was later based.

The theoretical outline which S. P. Tolstov proposed for the history of Khorezm, and by extension of Central Asia, was derived from the Marxist interpretation of the social evolution of Western Europe, as acknowledged by Tolstov (1949: 25) and analysed by Zejmal’ (1987). The prime mover that Tolstov postulated was class war and one of the key pieces of archaeological evidence was the irrigation system. Particular emphasis was placed on the Antique period (equivalent in Soviet terminology to Classical Antiquity) when it was thanks to slavery that the great canals were supposed to have been build: ‘the construction of the great canals of Khorezm could only have been undertaken by a centralized oriental despotism’ (Tolstov 1948: 49).

The interpretation of the irrigation systems by Soviet scholars is thus perfectly compatible with Wittfogel’s thesis (Wittfogel 1957; see Barceló, in Vea 1998: 7); what changes is the prime mover postulated (Francfort and Lecomte 2002: 634). Both agree that the construction of vast irrigation systems was linked to the emergence of states and to

political despotism and both use the discovery of major irrigation canals to explain the existence of the state: in one case it is because only a centralized state able to control the workforce could have built them (e.g. Andrianov and Mukhamedzhanov 1980: 37–42), in the other because they would have caused the emergence of a despotic state. It is therefore not surprising that, when Soviet criticism of Wittfogel went beyond the accusation of bourgeois revisionism, it was centred not so much on the role of irrigation as on the causal factor upon which the system was built.²

The weakness of the link postulated between irrigation and the state has been shown by various scholars,³ and in this article we will not return to these questions. However, the quality of the work of teams such as S. P. Tolstov's means that many of their ideas remain commonly accepted as fact and justifies a re-examination of the link between irrigation systems and socio-political structures in the area.

The Middle Zeravshan Valley, Samarkand and the Dargom

The Middle Zeravshan Valley is a depression stretching in sub-meridian direction between offshoots of the Turkestan and Zeravshan ranges, with a total extent of about 230km and a maximal width close to 70km. The braided river beds and their out-spanning irrigation systems form a cultivated oasis that can be considered as one of the agricultural heartlands of Central Asia. It is surrounded by gently sloping loess foothills intensively exploited for ovi-caprids and cattle pasture, as well as for dry farming in favourable years. The total cultivated area of the Middle Zeravshan Valley measured on the satellite imagery (Fig. 1 left) is currently approximately 6600km², making this area one of the more significant oases in Central Asia. Because agriculture in the Middle Zeravshan Plain depends on irrigation, the settlement pattern is intimately linked to water management and to the water landscape (Rondelli and Tosi 2006). The water landscape is formed by a complex network of natural and artificial watercourses crisscrossing the alluvial plain, creating a series of *jazirehs*, each one of which is characterized by different ecological features (Fig. 1 right).

This landscape is in constant evolution, due both to natural phenomena such as erosion, deposit of alluvium, floods and meandering and to artificial interventions, either to preserve an existing system or to build a new one. Its main arteries include the Zeravshan (which is divided into two main channels Ak Darya and Kara Darya), the Bulungur and Pajaryk on the right bank and the Dargom and Narpaj on the left bank. We will concentrate our discourse on the Dargom, which provides water to the city of Samarkand and the south and south-eastern part of the Middle Zeravshan Valley.

Despite its contemporary appearance, with numerous meanders, deeply cut into the loess terraces (Plate 1), no one disputes the artificial origin of the Dargom. It forms a typical canal, deriving from the Zeravshan river at the height of the Dam of the First of May, close to the Tajik-Uzbek border, cutting through the small water courses descending from the Zeravshan mountain range and following as far as possible the contour lines.

Its size, length (over 100km) and the area which it brings under irrigation (about 1000km²) enable it to be classified as a major engineering operation. It is quite clear that



Plate 1 The Dargom canal.

this irrigation system was (and is) associated with a hydraulically compact society, not a hydroagricultural or a hydraulically loose society, and more precisely that it corresponds to the most characteristic form of Wittfogel's hydraulic society, according to the classification of Price (1994: fig. 1).

The construction of the Dargom has often been linked to the emergence of the city of Samarkand as a major urban centre. Indeed, the size of the city from the moment of its foundation or soon after (over 200ha *intra muros*) and its apparent dependence on water from the Dargom seem to fit in well with the idea of a large-scale state-sponsored intervention.

Thus, the unification of the Middle Zeravshan Valley into one interlinked productive unit, the creation of a vast irrigation network and the construction of Samarkand as a capital city at the centre of the alluvial plain appear to be an excellent example of the link between irrigation and political centralization. This is stated explicitly by Gentelle: 'Only a state is capable, once the strategic position of the site on the commercial roads of Central Asia has been recognized, of mobilising the enormous mass of labour necessary for the construction of the whole' (2003: 191).

Isamiddinov (2002: 30) proposes three main stages in the development of the irrigation system in the Samarkand area. Starting in the Eneolithic period (fourth millennium BCE), irrigation systems were based on small derivations from mountain streams (called *sajs*) and underground springs and the total irrigated area is estimated at 5000ha. In the second period, from the eighth to the seventh century BCE, a vast network of canals was built, including the Dargom and Bulungur, enabling the irrigation of some 70,000ha. Finally, by the early centuries CE, in the third stage the system was completed by the extension of canals to the west (with the construction of the Eski Angor, Pajaryk and Narpai canals), which led to the maximum possible area being irrigated prior to the Soviet period.

Dating the construction of the Dargom is, however, extremely difficult⁴ because the canal may well have partly reused ancient stream beds and previously existing canals derived from *sajs*. Thus what needs to be dated is not only the construction of the canal but also the date at which water from one source replaced water from another source. The key to this lies in the type of alluvial deposits left by the Zeravshan and those left by the mountain *sajs* (see Ivanitskij and Inevatkina (1999) for a detailed attempt to date the Dargom to the first half of the first millennium BCE, basing themselves on this).

A preliminary reconstruction of the landscape, prior to the construction of the Dargom, has been done by analysing SRTM data (Shuttle Radar Topography Mission), historical maps, such as Fedchenko (1870), aerial photos and topographical maps from the 1950s (1:10000 scale). This enabled the recognition of many palaeohydrological traces, including underground evidence not visible in the field or on the topographical maps. It is thus possible to reconstruct the ancient north-western courses of the mountain *sajs* prior to the construction of the Dargom.⁵

The reconstructed natural water courses shown in Figure 2 would have been able to provide water to an important part of the southern Middle Zeravshan Valley plain. Each of the *sajs* could itself be derived from and linked to the others, giving rise to proto-Dargoms, which were eventually incorporated into a single network by the derivation from the Zeravshan and doubled by the construction of the Jangi Aryk (Fig. 3).

The location of sites from the Iron Age and Antiquity is perfectly compatible with a system of small canals derived from the mountain *sajs*, whereas Samarkand itself is ideally situated to exploit the water both from the *sajs* and from a series of natural springs, which

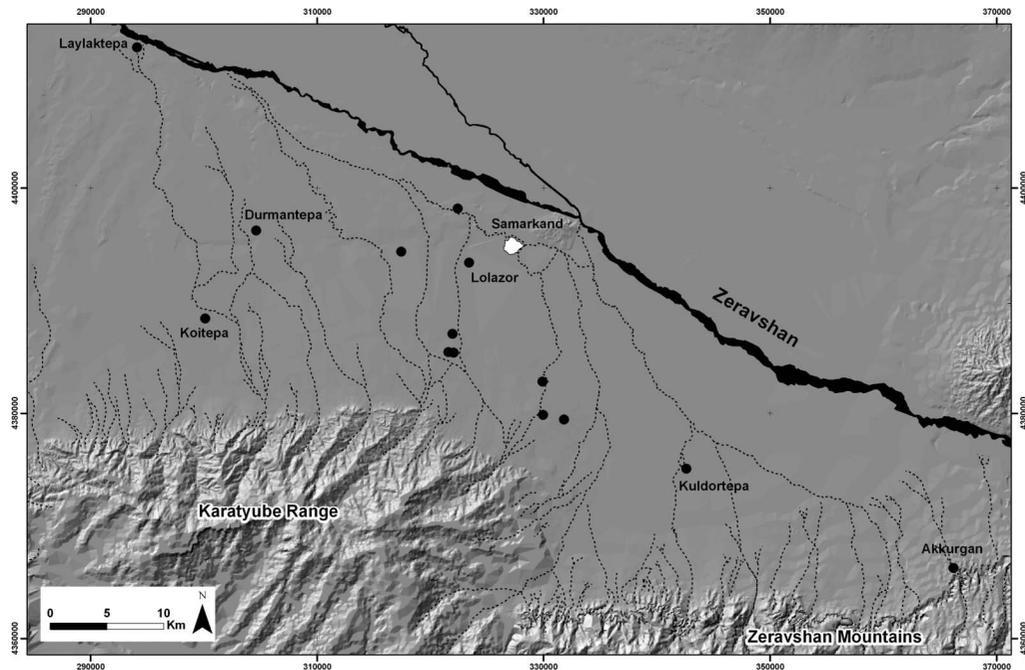


Figure 2 The original courses of the *saj* with possible sites of the Achaemenid period.

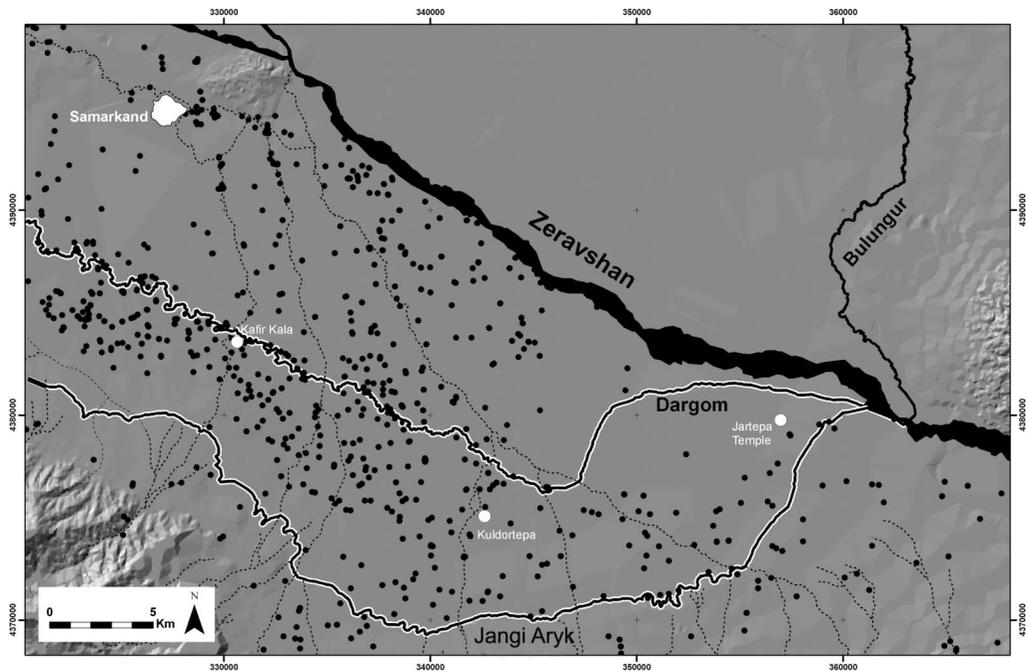


Figure 3 The complete irrigation system with sites of the Early Middle Ages.

could easily have provided sufficient water for the emergence of the city and its initial period of growth (Gentelle 2003: 202–3; Isamidinov 2002: 17–18; Mukhamadzhano 1969).

It is thus possible to postulate a progressive construction of the irrigation network over the long term, without the existence of an initial master plan or a centralized political decision. The fact that most sites and associated fields can be irrigated with water proceeding from either of two potential sources – the Zeravshan or the mountain *sajs* and springs – would have reinforced the overall resilience of the system.

The only sites that cannot be explained without recourse to the Dargom are those from the Early Medieval Period (Fig. 3). It was during this period that most sites were occupied for the first time and it was also during this period that a number of key sites rose along the Dargom, such as the administrative centre of Kafir Kala (Mantellini and Berdimuradov 2004: 115) and, at the start of the canal, the temple of Jarfepe, probably located on the ancient branch of the Dargom. It is also to this period that the best comparative example dates (Fig. 4): the construction of Mashruqan canal by Shapur I in Khuzistan, for which we have both archaeological and textual evidence (Christensen 1993: 107–8).

The Sogdian period thus appears as either the period of construction of the Dargom canal or the period during which the lands potentially irrigated by this canal were fully occupied. It is therefore a period of key importance for understanding the relation between the political structure and irrigation system of Samarkand. It is also a period during which ‘the archaeological landscape . . . expresses an extreme decentralization of public power’

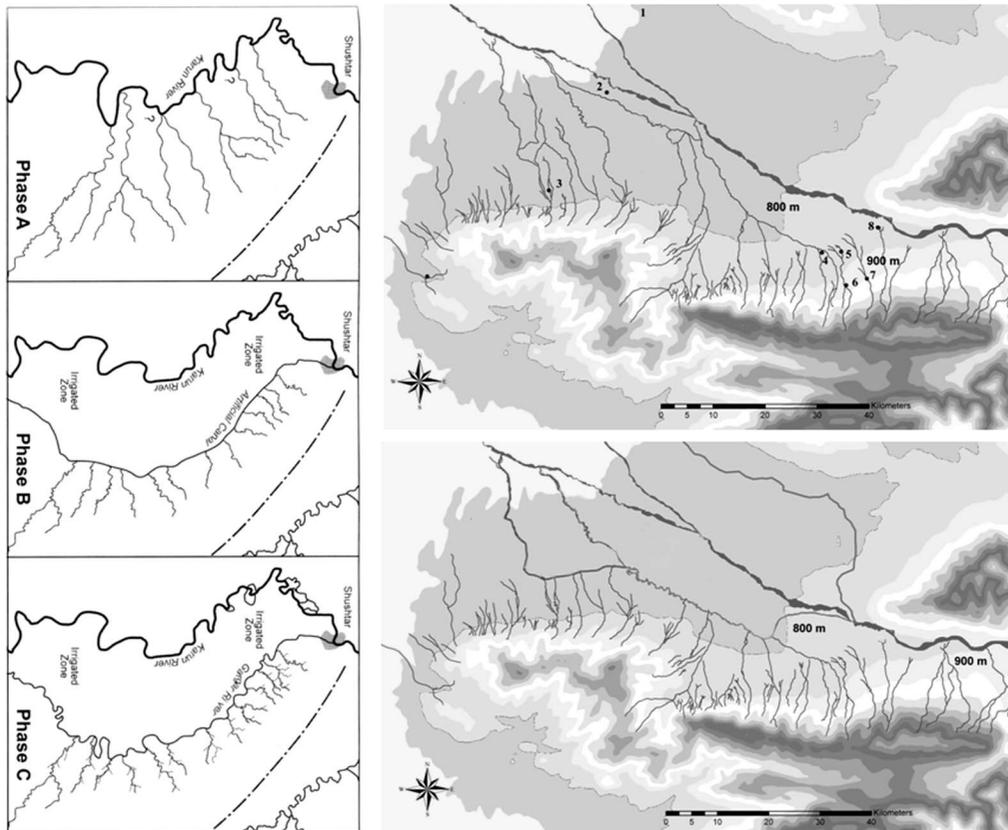


Figure 4 A comparison between the Mashruqan and the Dargom canals. On the right side the Dargom canal (proposed reconstruction of the two main phases); on the left side the Mashruqan canal (image from Alizadeh et al. 2004: 81, fig. 13).

(Maršak and Raspopova 1991: 188) with at least two realities coexisting: on the one hand, rural castles – sometimes compared to European feudalism – and, on the other, autonomous city-states in which the king was but a *primus inter pares*, hereditary succession was not systematic and the city itself had full juridical status, and may even in certain cases have minted its own coins (de la Vaissière 2004: 151–3). The political maps which have been proposed for the period⁶ clearly show that the hydrological boundaries did not coincide with the political ones, presumably implying that there were ‘sources of social stratification and administrative control other than irrigation’ (Roeder in Hunt and Hunt 1976: 403).

The idea of a fairly loose link between political structures and irrigation systems seems supported by ethnographic evidence from both Chinese and former Soviet Central Asia. Local specialists are able to build complex, long canals with extremely simple methods, based on eye measurement, and often obtain better results than modern engineers using state-of-the-art technology (Wawrzyn Golab 1951: 192–3). Thus at the end of the nineteenth century in what is nowadays southern Uzbekistan, two small agro-pastoral villages derived water from the Surkhan Darya without difficulty; Russian engineers,

however, had enormous difficulties in successfully prolonging and maintaining the same canal to bring water to the new town of Termez (Stride 2005: 400–3).

This lack of involvement of the state seems in some cases to extend to the decision to build the canal itself. Wawrzyn Golab thus describes the situation in eastern Turkestan in the first half of the twentieth century as one where it was in fact generally left to the local headmen to decide if and when a canal was to be built. He adds that the government does nothing: 'It neither grants funds nor supplies provisions, nor lends any technical assistance whatever' (Wawrzyn Golab 1951: 195–6).

We would therefore argue that the main nodes of the settlement pattern, and in particular Samarkand, emerged prior to the construction of the Dargom irrigation system and that their localization was linked to the proximity of water from either mountain *sajs* or springs but had nothing to do with a hypothetical centralized political entity. The construction of the Dargom is likely to have been progressive and to have resulted from consensual agreements and alliances between the different local populations which would have benefited from it. There is no need to postulate an exceptionally large labour force either for construction (see Francfort and Lecomte 2002: 632) or for maintenance (the capacity and slope of the Dargom mean that it does not require a seasonal cleaning). And there is certainly no evidence to link the construction of the Dargom canal to a strong centralized state.

This said, the most compelling evidence against Wittfogel's and Tolstov's models comes from analysing the long-term relationship between the irrigation system and socio-political structures in and around Samarkand.

Political power, water management and the nomads

The irrigated oases of Central Asia in general and the Middle Zeravshan in particular do not exist in isolation from the rest of the landscape. They form part of 'the mixed zone', an ecological zone characterized by comparatively small areas suitable for irrigated agriculture, surrounded by much larger resource-rich pastoral areas such as desert, steppe and/or mountains. This variety of landscapes encourages mixed economies (mostly combining agriculture and mobile pastoralism), in which close interaction between pastoralists and agriculturalists is the rule (Paul 2003: 31–2).

Economically it makes sense to combine different ways of landscape exploitation so as to maximize the use of different ecological niches and potential synergies between pastoral and agricultural economic systems. Indeed, nomads and sedentaries can interchange services (for example, herds manuring fields after the crops), people and especially products (food, clothing, artefacts, etc.) to the extent that some specialists have spoken about the differentiation between nomads and sedentaries as a kind of social division of work on a vast scale or even as different professional groups coexisting and interacting within the same economic system (Digard 1990: 101). Obviously, this co-evolutionary interaction over the long term had a lasting effect on socio-political structures and in particular on the assumed link between irrigation systems and the state.

In his analysis of China and Inner Asia, Barfield (1991: 29) defines four interactive spheres of which the two extremes were the Eurasian steppe sphere, marked by seasonal migrations, extensive economy, low population density and tribal political organization,

and Chinese society with sedentary lifestyles, intensive irrigated agriculture, high population density and a centralized bureaucratic government. Southern Central Asia fits with his definition of Chinese Turkestan, which incorporates a number of different ecological zones adapted to either/both nomadic or/and sedentary people. When compared to China or Mesopotamia, irrigated agricultural oases such as the Middle Zeravshan Valley are comparatively small. Not only is any given city limited in size by its agricultural hinterland, but it entertains a complex relation with its pastoral hinterland. Furthermore, supra-regional cohesion is fragile due to the different oases being isolated and lacking communications. The development of large irrigation-based systems is therefore exposed to strong internal limits. The main external factor is, doubtless, the proximity of the Eurasian steppes and the pastoral nomadism and tribal structures associated with this world. Like China, southern Central Asia is in direct contact with the steppe world, however, unlike China, much of southern Central Asia is suited to a pastoral nomadic lifestyle.

The socio-political elite is therefore permanently obliged to reach some form of agreement with the nomadic world and, not surprisingly, this elite usually actually originates in the steppe. The absence of references to irrigation is logical because real power and social structures among the elite are decided outside the irrigated lands. Various authors have thus argued that the revolt of Spitamenes against Alexander the Great in 328 BCE, which started in the Middle Zeravshan Valley, was caused by the fact that the Greeks were endangering the economic complementarity and the system of interaction that existed between nomad and settled populations. This system had been preserved by the Achaemenid power but was questioned by Alexander the Great who wished to establish an urban state clearly separated from the nomadic world (Mandel'shtam 1977: 219). According to Holt (1988: 53–7), the revolt ended only when Alexander reached an agreement with the local population and ceased attempting to impose a frontier between nomadic and sedentary worlds.

The study of the political history of the Middle Zeravshan Valley in the last centuries BCE and the first centuries CE (Rapin 2007) confirms the key role played by the nomads, as do the Chinese historical sources. The outer limits of the Middle Zeravshan Valley are clearly marked in the landscape by the tombs of nomads (Fig. 5) and the most important of these tombs (notably Kok Tepe) often occupy the citadel of important pre-existing first millennium BCE sites situated on the border of the irrigable plain (Kok Tepe, Sazagan).

Another excellent example is provided by the most famous ruler of Samarkand, Tamerlane, whose magnificent gardens depended on the irrigation system we have described but who ruled as a true semi-nomad. Ruy Gonzalez de Clavijo, the ambassador of the king of Castilla, thus describes how his meetings take place not in the city of Samarkand but in gardens surrounding the city, and more mentions are made of tents than houses, as can be seen from the following characteristic extract:

On this plain the lord ordered many tents to be pitched for himself and his woman; and that all his host, which was scattered in detachments over the land, should be assembled together, each man in his place, and that their tents should be pitched. . . . After three or four days, twenty thousand men were assembled round the tents of the lord. . . . Every division of the horde is provided with all that the troops require and they are arranged in streets.

(Clavijo 1999: 270; in original text: VIII, 4)

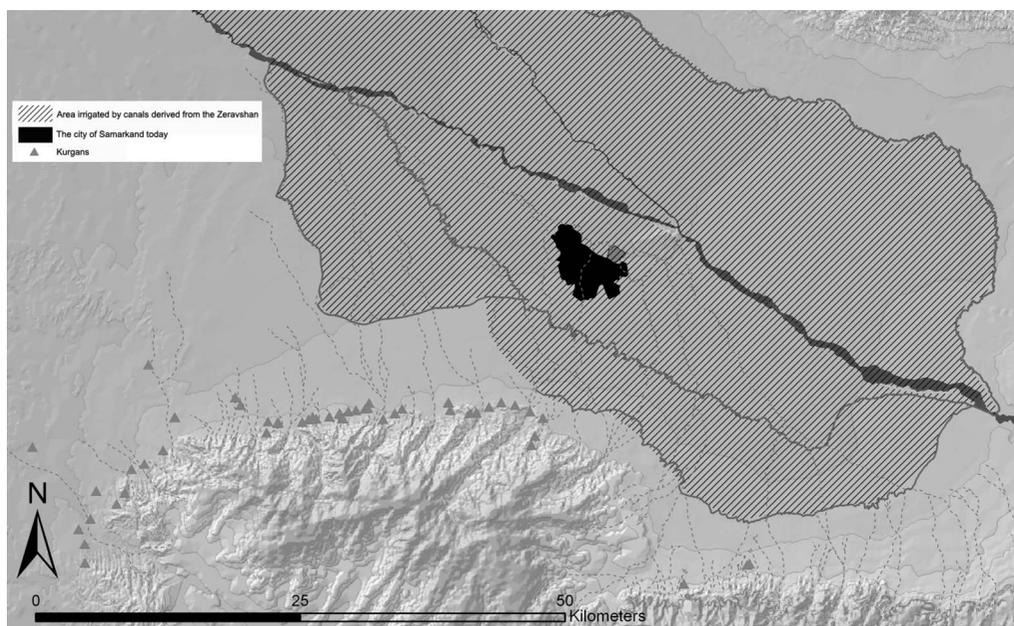


Figure 5 Distribution of the main kurgans (tombs of nomads) to the south of Samarkand.

This impression is further confirmed by our surveys which offer little evidence of a dense settlement pattern during this period.⁷

Finally a major German research project (SFB 586, B2) on ‘Nomadic Rule in a Sedentary Context and State Formation in Central Asia in the Sixteenth and Eighteenth Centuries’ has shown how the Uzbek conquests of the main sedentary areas of Central Asia such as the Middle Zeravshan Valley and the Surkhan Darya Province, led by Mohammad Shajbani Khan in the early sixteenth century, did not result in the ruling dynasty becoming an urban-based kingship despite ruling from Bukhara for centuries. Indeed, Holzwarth describes eighteenth-century Bukhara as a state in which the nomadic conquerors had institutionalized and consolidated their rule in a sedentary context but where the ruling class and the upper strata of society remained based on a nomadic life style and a segmentary social structure.

The military rule of the Uzbek tribal chiefs ended only in the mid-nineteenth century when Amir Nasrullah finally strengthened the central government in Bukhara and started relying for the first time on a land-based bureaucracy in which non-Uzbeks, tied to the sovereign by personal loyalty and not tribal relation, held key positions (Holzwarth 2006). From Genghis Khan up until the Soviet period, the main way of legitimizing kingship was based on descent from Genghis Khan, be it direct, by marriage or invented. Elite Turkic and Turco-Mongol dynastic clans fought for control over the cities, which remained centres of Irano-Islamic civilization representing a sedentary, oasis culture dependent on irrigation agriculture and international trade (Subtleny 1989: 103). We would argue that the pre-Mongol situation was probably not fundamentally different.

Thus, if one were to search for a common denominator among the main states that have existed in Central Asia, it would be the nomadic pastoral factor. The vast majority of the

ruling dynasties are of nomad origin and retain key characteristics of this origin, notably in the socio-political sphere. Indeed, one of the only cases when Samarkand was ruled by a dynasty of non-pastoral nomadic origin was under the Samanids (ninth to tenth centuries CE). They defined themselves as a wall against the steppe nomads (Golden 1990: 347, citing Nakhshakī); however, their policies against the nomads conversely created an ever-increasing tribal Turkic presence in the heartland of their empire and eventually led to the Karakhanid conquest of Central Asia (Golden 1990).

Concluding remarks

Current evidence does not enable us to link the construction of the irrigation system of the Middle Zeravshan Valley to a specific type of socio-political structure and certainly not to a strongly centralized state, as previous scholars have suggested. Indeed, the period of maximum expansion of the settlement pattern, and therefore of the irrigation system upon which it necessarily depended, dates to the Early Medieval Period, a period of political fragmentation and expansion by segmentation and not nucleation. Furthermore over the long term, all available data clearly point to a complex reality in which irrigated agriculture is key from an economical perspective but the socio-political structure is mainly dominated by an elite of pastoral nomadic origin.

Models such as Tolstov's or Wittfogel's have been developed for and by specialists of the great irrigated heartlands such as China or Mesopotamia.⁸ They have been applied to cases such as the Middle Zeravshan Valley because most archaeologists imagine the Middle Zeravshan Valley as a *miniature Mesopotamia*. This is due both to the nature of archaeological evidence (which privileges evidence of permanent sites) and to the division of our discipline between specialists of the pastoral nomadic world and specialists of the sedentary agricultural world. Whereas the former emphasize the extreme rarity of pure nomadic pastoralism, with most pastoralists being semi-nomadic and often part-time agriculturalists (Khazanov 1984), the latter usually simply consider the pastoral nomadic world as an exogenous factor.

The Middle Zeravshan Valley, just like Barfield's 'Chinese Turkestan', is no *miniature Mesopotamia*. In Central Asia, nomadic pastoralism and sedentary irrigated agriculture coexist and societies 'exhibit non-uniform definitions of general institutions to begin with' (Frachetti in press: 25). In order to understand the link between irrigation systems and socio-political structures, we therefore propose to characterize the cultural landscape of the Middle Zeravshan Valley by the presence of two subsystems: the subsystem of agricultural-sedentary rules with a population of sedentary agents and the subsystem of pastoral-nomadic rules with a population of nomadic agents.

Both subsystems show a considerable degree of specialization within and division of labour between them. The total system represents a combination of different methods of landscape exploitation enabling an efficient use of different ecological niches. Finally, the two subsystems do not only interact but emerge in a process of co-evolution, can be understood only as such and should be conceived as a complex systemic whole.

The fact that the irrigation system of the Middle Zeravshan Valley is comparable to that of other great rivers such as the Euphrates or the Huang He has socio-economic



Plate 2 'Nomads surveying the canals': a symbolic image of water management in early twentieth-century Central Asia.

implications but very few socio-political ones. Indeed, for millennia, the best peaches and sweetest roses of Samarkand have been in the possession of men who depended not on canals but on horses for their power (Plate 2).

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Notes

- 1 An excellent review of the main Soviet studies of irrigations systems in Central Asia (as well as those of more recent research projects) is provided by Francfort and Lecomte (2002).
- 2 As Andrianov said, ‘State power was thus the main cause and not the result of the success of the development of irrigation’ (1969: 65).
- 3 A particularly elegant demonstration is proposed in Francfort et al. (1989). The authors created an expert system in order to analyse the deductive reasoning underlying major archaeological theories (such as Wittfogel 1957) concerning the social evolution of complex societies. They showed that the theories in question necessarily implied the existence of irrigation not only in Mesopotamia but also in Iron Age Europe and amongst Anthill societies (commented on in Francfort and Lecomte 2002: 635–6).
- 4 Detailed reviews and references concerning the different dates proposed (ranging from the eighth century BCE to the sixth century CE) are provided by Isamiddinov (2002: 20–7).
- 5 For a detailed description of the methodology see Rondelli and Tosi (2006). Previous authors have already underlined the potential importance of these mountain *saj* prior to the construction of the Dargom (Isamiddinov 2002: 19).
- 6 See, for example, map 5 in de la Vaissière (2004), according to which the Dargom passes through at least two political units. See also the discussion in Grenet and de la Vaissière 2002: 166).
- 7 See also other surveys from the Surkhan Darya (Stride 2005: 358–9) province or Herat (U. Franke pers. comm.).
- 8 We would like to stress that we are not assuming that these models are correct in the Chinese or Mesopotamian contexts but simply stating that they should not be applied to the Middle Zeravshan Valley.

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