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“A field upstream is better than a mirab brother”: Searching for Power on Central Asian Water.

Introduction

The study of power relations surrounding the catchment and exploitation of water in Central Asia has undoubtedly advanced in the course of the last few years. This essay seeks primarily to illustrate -and, to some extent, critique- the main lines along which such study has progressed. The focus will be predominantly on the Tsarist era, when the main oases of southern Central Asia were included in the territory either of Russian Turkestan, or Khiva and Bukhara. In the following pages, I contend that so far scholars have predominantly advanced our knowledge on three aspects: power on water as a *locus* of conflict between colonizer and colonized; the existence of multiple overlapping juridical frameworks for the governance of water; and the way in which modern scientific knowledge and technology became a tool for power to be exerted, whilst the infrastructure that embodied that knowledge made such power visible, both before and after the 1917 revolution. Indeed, a common feature of scholarship so far is its bridging of the revolutionary divide, thus achieving a more sophisticated understanding of the nature of the Soviet regime.

In a way that complements rather than rejects such findings and reflections, this essay is also meant to map out two research directions which have been neglected so far, and to offer, in the last section, an exploratory example of what could be done. These two intersecting directions result from the need to take into account on the one hand the materiality of water (including the geographical dimension of specific watersheds) and, on the other, the grassroot mechanisms for the extraction of labour that underpinned the enjoyment of water rights for the vast majority of the Turkestani rural population. As the Uzbek proverb¹ chosen as a title of this essay reminds us, no discussion of power relations that influenced the catchment, distribution, and usage of water can avoid the fact that water flows mercilessly from top to bottom along a gradient. Hence, someone whose field is located upstream along a canal will naturally start from a position of advantage *vis à vis* someone else, who lives downstream. Furthermore, the latter's relative disadvantage can hardly be offset even by the complicity of those in charge of the distribution of water on the canal, in this case a *mirab*.² Without necessarily adopting the language of 'assemblage' or 'network' to integrate

¹ Possible variants are: “It is better to have a plot of land below [*scil.* a source of water, *i.e.* a plot with easy access to water], than a *mirab* as an uncle” (*Doying mirob bo'lguncha, yering o'y bo'lsin*); “Either your field should be rich in water, or your father should be a *mirab*” (*Yo yering serob bo'lsin, yo otang mirob bo'lsin*). I got these alternatives from Ulughbek Mansurov (private email, 24.4.2016).

² The word *mirāb* (Uz. *mirob*) is the contraction of *amir* (=Ar. 'commandant') plus *āb* (Per. 'water'). (Diacritics are generally omitted in this paper.) For a description of the duties of the *mirabs* and of their superiors, *aryk-aksakals* (before the conquest known respectively as *kok-bashi* (= *mirab*) and *mirab-bashi* (= 'chief of the *mirabs*)): Maya K. Peterson, “Technologies of Rule: Empire, Water, and the Modernization of Central Asia, 1867-1941” (PhD. diss., Harvard University, 2011), 80–82. Compare: S.P. (pod red.) Trombachev, *Voprosy Sel'skogo Khoziaistva i Irrigatsii Turkestana* (Tashkent: Izdanie Turkvodkhoza, 1924), 114. For a general introduction to irrigation technology in Central

the agency of material objects (*e.g.*, the river), it is still possible to take seriously causality that originates in the non-human sphere, when it comes to the understanding of power relations in rural Tsarist Turkestan.³

Against this background, it was power relations between villages or even within the latter that defined in the very first instance the constraints and opportunities which the vast majority of Turkestani water users labored under, well before colonial attempts to capture them, either in discourse or in practice. Hierarchies in the enjoyment of water rights cannot be understood without taking seriously both geography and the mobilization of resources (primarily human labour) that was necessary for water usage to be preserved over time.

Hence the subtitle to this paper could have been: “A materialist approach to power and water in pre-revolutionary Turkestan”, echoing a panel held at the 2008 annual conference of the Middle East Studies Association and the resulting monograph issue of the *Journal of the Economic and Social History of the Orient*, both called “‘Materialist’ approaches to Islamic History”.⁴ In them, Ulrika Mårtensson and Maya Schatzmiller argued that an emphasis on institutions and norms in the medieval Middle East as explanations for economic growth (or lack thereof) risks resulting in a more sophisticated form of Huntington’s ‘clash of civilisations’ that neglects other possible explanatory variables and hampers innovative economic and social history based on quantitative data. Similarly in the case of Tsarist Central Asia recent research, despite considerably expanding our knowledge, has viewed irrigation and water mostly through a cultural (super-structural?) prism, privileging the study of *discourses* (either normative or non-normative) on “water and power in Central Asia” and on the underlying technology. There is arguably room, thus, for a rediscovery of power structures visible in material and quantifiable aspects, such as the exploitation of labour, themselves inextricably linked to the spatial dimension of canals and rivers.

This focus on super-structural aspects is the legacy of scholarship dating from before and after the collapse of the USSR. Soviet-style manipulation of published statistical data has led to a general disregard or skepticism for quantitative sources (both colonial and vernacular), in particular among scholars from Central Asia itself. Marxist categories have also been discredited: in Soviet historiography, notions of ‘class structure’ and ‘contradictions’ mostly refer to a crude Leninist

Asia: Ian Murray Matley, “Agricultural Development,” in *Central Asia*, Ed. by Edward Allworth, I ed. (New York & London: Columbia University Press, 1967).

³ For an overview “socio-material perspectives”, including “new materialism” in reference to the nexus of “water, infrastructure, and political rule”: Christine Bichsel, “Water and the (Infra-)Structure of Political Rule: A Synthesis”, *Water Alternatives* 9, no. 2 (2016): 365-6; for an application: Elizabeth Baker Brite, “The hydrosocial empire: The Karakum River and the Soviet conquest of Central Asia in the 20th century.” *Journal of Anthropological Archaeology* 52 (2018): 123-36. Criticism of this approach is in: Artur Ribeiro, “Against Object Agency. A Counterreaction to Sørensen’s ‘Hammers and Nails.’” *Archaeological Dialogues* 23, no. 2 (2016): 229-35. A similar prudent attitude to the attribution of agency to material objects and “natural processes” is embraced by Peterson in her more recent book: Maya Peterson, *Pipe Dreams: Water and Empire in Central Asia’s Aral Sea Basin*. (Cambridge: CUP, 2019), 4-5, 12.

⁴ Ulrika Mårtensson, “Introduction: ‘Materialist’ Approaches to Islamic History,” *Journal of the Economic and Social History of the Orient* 54, no. 2 (2011): 117–31. Maya Schatzmiller, “Economic Performance and Economic Growth in the Early Islamic World,” *Journal of the Economic and Social History of the Orient* 54, no. 2 (2011): 132–84.

vulgate,⁵ whilst system of domination based on the extraction of surplus are rarely discussed on the basis of Marx's works, and even less in the light of genuine empirical evidence. The bad reputation anything vaguely 'Marxist' now enjoys in regional historiography paradoxically extends to quantitative studies, even when the latter are more inspired by the 'cliometric revolution' than by a socialist one. While in 2007 a group of Western historians could discuss how, once they had dismissed Marx's answers and predictions on social change, Marx's *questions* could still serve as guidelines for research, unsurprisingly this sort of engagement has been almost completely absent in present-day Central Asian studies, including in the study of irrigation and water usage.⁶

After 1991, the residual Cold War tradition of Sovietological studies on 'identity' and nationalism in the Russian and Soviet peripheries was almost immediately followed by the 'cultural' and the 'post-colonial turns'.⁷ Paradoxically, these were 'turns' away from something that had not yet developed in Central Asian history, unlike what had occurred in the study of other regions. The so-called 'imperial turn', equally tends to put in the limelight norms, institutions, and cultural practices.⁸ While it possesses a precious comparative dimension, it rarely studies flows of material resources.⁹ When it does, for instance in Pravilova's first monograph,¹⁰ it looks at empire-wide mechanisms, rather than at the grass-roots destiny of agricultural surplus. Turning specifically to the abundant recent scholarship on irrigation in pre-revolutionary Russian Central Asia, questions of power over water have consequently been examined through the lens of post-colonialism or of the critique of the Russian imperial model.

This essay begins by considering three main areas in which research on "water and power" in pre-revolutionary Russian Turkestan has greatly advanced in the past fifteen years: colonial administrative practices, the related issue of 'colonial knowledge' of native water rights, and the expansion of modern hydraulic engineering in the region. Yet these three research streams have ended up emphasizing two aspects: the 'racial' or 'ethnic' cleavage (while 'class' or similar social

⁵ A most egregious example is: A.Kh. Valiev, *Polozhenie Osedlogo Dekhkanstva Fergany v Poslednei Chetverti XIX I Nachale XX Vv. (1876-1917). Avtoreferat ... K.i.n.* (Tashkent: AN UzSSR – Institut Istorii i Arkeologii, 1958). Here the author stated (p. 1) that he would show "... the gradual, [but] accelerating process of impoverishment, devastation, and ultimately complete ruin of the peasant masses of Fergana, which inevitably [emphasis mine] led to the strengthening of class struggle and the growth of the national liberation movement in the province". See also: Zhanna A. Zaichenko, *Klassovaia Bor'ba v Uzbekskom Kishlake (1925-1929 Gg.)* (Tashkent: Uzbekistan, 1989).

⁶ Chris Wickham, ed., *Marxist History-Writing for the Twenty-First Century* (Oxford: British Academy, 2007). For a re-evaluation of the importance of 'class' as a category of historical analysis in pre-collectivisation Uzbekistan: Marianne Kamp and Russell Zanca, *Writing the History of Collectivization in Uzbekistan: Oral Narratives* (Seattle: NCEEER, 2008); Jeanine Dağyeli, "Moral Und Ökonomie. Land- Und Wassernutzung Im Emirats von Bukhara," accessed April 25, 2016, http://www.zmo.de/forschung/projekte_2014_2019/dagyeli_bukhara.html.

⁷ See the essays in: Svetlana Gorshenina and Sergei Abashin, *Le Turkestan russe: une colonie comme les autres ?*, (Tachkent: EDISUD, 2009). For an early critique of this tendency: Adeeb Khalid, "Backwardness and the Quest for Civilization: Early Soviet Central Asia in Comparative Perspective," *Slavic Review* 65, no. 2 (2006): 232, doi:10.2307/4148591.

⁸ Michael David-Fox, Peter Holquist, and Alexander M. Martin, "The Imperial Turn," *Kritika: Explorations in Russian and Eurasian History* 7, no. 4 (Fall 2006): 705–12.

⁹ E.g. Alexander Morrison, *Russian Rule in Samarkand 1868-1910: A Comparison with British India*, 1 edition (Oxford ; New York: Oxford University Press, 2008).

¹⁰ Ekaterina Pravilova, *Finansy imperii: Den'gi i vlast' v politike Rossii na natsional'nykh okrainakh, 1801-1917*, (Moskva: Novoe Izdatel'stvo, 2006).

categories are marginalized), and large-scale new irrigation construction (while the destiny of the native, centuries-old irrigation systems is under-explored). This in turn has led to the neglect of systems of dominations *within* native society, as if they had disappeared with the advent of Russian rule. There are two ways to overcome this shortcoming: either one can engage with an array of vernacular sources, in particular contracts and judicial documents, to study power relations *within* villages in particular, perhaps mobilizing micro-historical methods; or one can adopt a macroscopic perspective and look at quantitative data on water use and on related provision of *corvée* labour for canal maintenance. On the basis of a sample of around 120 villages in the Samarkand province, one can see how all simplistic - and optimistic - interpretations of such burden by colonial and early Soviet observers were wrong, and how instead inequality was rife. A few reasonable hypotheses can be formulated about what determined the burden of the *corvée*. All in all, this essay demonstrates how limited was the intellectual and practical grasp of the colonial State and its experts of local custom in the allocation of water rights and water-related duties. Because it is on such a grasp that scholarship has focused, the latter risks over-estimating the agency of the colonial State machine and the relevance of the projects it sponsored.

What ‘power’ have we talked about so far? A survey

The power of colonizers and of their native collaborators

Despite the fact that citations from Foucault in works of academic history are now at least as ubiquitous as power was in his conception of it, when (modern) historians look for ‘power’, they still tend to see it in the State and in its administration. In looking at Tsarist Turkestan, historians have seen ‘power’ especially in the colonial civil-military administration and in the norms it established (or attempted to establish). The Turkestan general-governorship was created in 1867, two years after the Russian army had conquered Tashkent. Samarkand with the middle course of the Zeravshan river was annexed in 1868. In 1873 Khiva and Bukhara were reduced to the state of protectorates, while what remained of the khanate of Kokand, reduced to a puppet-state in 1867, was finally annexed as a Russian possession nine years later. One can broadly distinguish between the period up until 1886, and the years that followed: in 1886 the Turkestan general-governorship started being administered on the basis of a comprehensive piece of legislation, the so-called “Turkestan Statute”, and its subsequent amendments.

There are many reasons why historians have mostly considered the question of “power over water” in Turkestan through the prism of the (colonial) State administration. The first is practical: sources on how colonial officers took decisions are in Russian and more readily accessible. The second resides in the possibility of comparisons between the Russian colonial experience in Central Asia and that of other colonial powers elsewhere, most particularly in British India.¹¹ The third reason is the very persistent idea that large irrigation networks require, for their establishment and their

¹¹ Morrison, *Russian Rule in Samarkand 1868-1910*.

maintenance, a strong centralized power which supervises massive labour mobilisation. Wittfogel's "hydraulic hypothesis" has been criticized, for instance because it fails to take into account climate change as a driver of water history.¹² In the case of Central Asia, its ability to interpret the origins of complex and vast ancient canalization networks has been questioned on the basis of GIS-based archaeological studies.¹³ A few exceptions notwithstanding, this has not yet led to a reappraisal of the centrality of the State for the study of later periods. Finally, it is tempting to retro-project on the pre-revolutionary era policies, phenomena, and cultural-political assumptions that were most characteristic of the Soviet period, especially of its mature phase.

The emphasis on the colonial administration as the main *locus* of power over water in Turkestan is justified by the subjective perceptions of the historical actors on the ground, as reflected in their sources. In fundamental matters of land and water, the administration of colonial Turkestan thought about itself as in continuity with the pre-conquest juridical framework. Quite unlike its Soviet successor, the Russian civil-military administration did not have, at least up until the first decade of the 20th century, any explicit urge to 'modernize' the newly acquired periphery.¹⁴ The assumption that, according to Islamic law, no private property could exist on water and land (and, in particular, that all land was state land) shaped colonial policy-making, at least as a rhetorical reference or as a justification, even though this contradicted day-to-day local practices. The Russian colonial administration, in other words, represented itself as only perpetuating what *in their view* had been the rule before the conquest.

This rhetorical reference to the pre-colonial past could be stretched in different directions: on the one hand, 'continuity' in matters of irrigation could be presented as the equivalent, in water management, of intentional neglect (*ignorirovanie*) in policing Islam; on the other, stronger State control over water resources was increasingly advocated precisely in the name of the same 'continuity'.¹⁵ In the oscillation between these two poles, the initial "Temporary rules for the irrigation of the Turkestan territory", issued by the first governor-general, von Kaufman, represented an early attempt to intervene massively in the governance of irrigation: native officers in charge of a canal (*aryk-aksakal*) or of a local distribution network (*mirab*) were subordinated to Russian 'experts', in principle engineers (*irrigatory*).¹⁶ As with other decisions by von Kaufman, the

¹² Neville Brown, "Wittfogel and Hydraulic Despotism," in *A History of Water* (Vol. 2: The Political Economy of Water), Ed. by R. Coopey and T. Tvedt (London ; New York: I.B. Tauris, 2006), 103–16.

¹³ Sebastian Stride, Bernardo Rondelli, and Simone Mantellini, "Canals versus Horses: Political Power in the Oasis of Samarkand," *World Archaeology* 41, no. 1 (2009): 73–87, doi:10.1080/00438240802655302.

¹⁴ Adeeb Khalid, "Culture and Power in Colonial Turkestan," *Cahiers d'Asie Centrale*, no. 17/18 (December 1, 2009): 413–47.

¹⁵ Peterson argues instead that water technology was intentionally used by the Russian colonizers to "impress" the natives and therefore bring about their 'civilisation', given the prohibition of religious proselytism: Peterson, "Technologies of Rule: Empire, Water, and the Modernization of Central Asia, 1867-1941," 89. To support this bold statement, she cites: Vera Tolz, *Russia's Own Orient: The Politics of Identity and Oriental Studies in the Late Imperial and Early Soviet Periods* (Oxford: OUP, 2011), 29. But Tolz's argument is far more general. There is, in other words, a missing link.

¹⁶ This attitude run parallel to von Kaufman's attempt to achieve a precise grasp on individual landownership within the villages (Beatrice Penati, "Notes on the Birth of Russian Turkestan's Fiscal System: A View from the Fergana Oblast' .," *Journal of the Economic & Social History of the Orient* 53, no. 5 (2010): 739–69.)

“Temporary rules” were overhauled by his successor Cherniaev. From the early 1880s onwards, the lower-level water officers, the *mirab*, were regarded as part of the ‘native administration’ (as, for instance, village elders) and elected by a village assembly. The *aryk-aksakals*, were initially elected too; already in 1888, though, charges of corruption in the distribution of water quotas led the Russian civil-military administration at the district level to prefer appointed *aryk-aksakals*. This does not mean that the notion of the superiority of Russian technical knowledge over indigenous practice was abandoned: Russian engineers were attached to the provincial administration, and some Russians were appointed as *aryk-aksakals* - with mixed results.¹⁷ Some villages did not refer to any *aryk-aksakal* (especially if Russian), but only relied on the local *mirab*, whose appointment remained in the hands of native rural society.¹⁸

The native administration was largely frowned upon as corrupted, and the *mirabs* were no exception.¹⁹ Elections exposed the *mirabs* to the influence of the richer or higher-status members of each village community. As in the case of other native administrative officers (*volost’* administrators, *aksakals*, *ellikboshs*), Russian colonial authorities handled a huge number of complaints about the favoritism of *mirabs* and their iniquity in the allocation of water. Yet historians have shown that, by looking at these petitions in their context (including the outcomes of the inquiries they produced), it would be inexact to dismiss these phenomena as simply ‘corruption’: the complaints filed by groups of rural dwellers are part of more complex social interaction, where different factions were trying to advance their own candidates for various positions. While one may surmise that landless peasants and, more generally, the poorer strata of the village were marginalized in these dealings, petitions are to be viewed as a political tool parallel to the village assembly and its elections, rather than a true reflection of widespread ‘corruption’.²⁰

The criticism which *mirabs* and *aryk-aksakals* were subjected to, though, was also a reason for advocating a “strong authority”, characterized by the “never-flagging energy of all its executive organs”. Such a need was justified by looking at regional history – in particular, at the history of the Bukharan emirate since the crisis of the Tuqay-Timurid dynasty in the second quarter of the 18th century. As mentioned above, the idea of a continuity between the Russians and the previous ‘good’ rulers of Central Asia could easily be used to justify the desire to strengthen State control over water resources, for instance through a new “water law”.²¹ As noted by Teichmann, the improvement of Turkestan’s irrigation systems was a terrain on which an otherwise weak colonial power could demonstrate its strength.²²

¹⁷ The authority to appoint *aryk-aksakals* belonged first to the provincial military governors, then to the district (*uezd*) commandants: Morrison, *Russian Rule in Samarkand 1868-1910*, 210–15.

¹⁸ E.g. Nil S. Lykoshin, “Chapkullukskaia Volost’ Khodzentskogo Uezda,” *SKSO* 8 (1906): 48.

¹⁹ Most famously, see: V.P. Nalivkin, *Tuzemtsy: Ran’she i Teper’* (Tashkent: Tipografiia A. Kirsnera, 1913), 70–77.

²⁰ Morrison, *Russian Rule in Samarkand 1868-1910*, 218–23. For a critique, see: Julia Obertreis, *Imperial Desert Dreams: Cotton Growing and Irrigation in Central Asia, 1860-1991*. (Göttingen: V&R unipress, 2017), 22.

²¹ N.M. Virskii, *Diurtkul’skaia Volost’ Samarkandskogo Uezda* (Samarkand: Tipografiia Shtaba voisk Samarkandskoi oblasti, 1895), 14–15.

²² Christian Teichmann, *Macht der Unordnung: Stalins Herrschaft in Zentralasien 1920-1950* (Hamburg: Hamburger Edition HIS, 2016), 29.

In this respect, the study of the power of the colonizers and of their native collaborators (*i.e.* the civil-military administration of Turkestan and of the water-related part of the native administration) has the merit of casting some light on the “water-power” nexus in this region from a double viewpoint: it looks at both the nitty-gritty machinery of authority and dependence, and shows how the imperial government (or indeed private lobbies) could weaponize accusations of corruption and mismanagement to request the overhauling of the existing situation. The missing link in this approach, though, is that it still looks at *discourses* on the “water-power” nexus at the level of the *aryk-aksakals* and *mirabs*. We now know much better *texts* produced to represent and deplore the native administrators’ doings generated other *texts* that could ultimately change such a state of things, particularly new norms. This, as hinted at above, often reflected a desire for clarity, systematization, and hierarchy in the relation between native and ‘Russian-style’ water rights, and between the institutions charged of them. However, by using petitions, on the one hand, and official accounts of ‘corruption’, on the other, one cannot ultimately ascertain whether accusations of corruption were well-founded or otherwise, because this angle of observation does not include the *material* doings of the actors concerned (that is, how they allocated water and labour).

Whose water rights? Whose water right?

This leads us to another topic that has attracted the attention of researchers, although to a lesser extent: the incommensurability and clash between native and Russian ideas on water rights. This term refers not only to the rights (in the plural) of native vs. Russian juridical persons in Turkestan, in the sense of their respective subjective juridical positions, but rather to the overall question of legal pluralism in Turkestan, and how this has (or, rather, has not yet) been apprehended in the study of the “water-power” nexus in the region. Historians have only recently become aware of the full extent and internal workings of legal pluralism in matters of land: until a decade ago, the general opinion was that private rights over land did not exist in Russian Turkestan, until Russian colonisers ‘invented’ them. Only on the timing of such innovation was disputed: either the land assessment works ordered in the 1886 Turkestan Statute, which Soviet historiography regarded as a progressive “land reform”; or the introduction of Russian legal titles on the land parallel to the ‘cotton boom’. The most recent historiography on land rights more precisely integrates the study of colonial discourses and regulations on the latter with the meaning such rights assumed in the lived experience of the native population.²³

Historians have similarly focused on the way discussions about native water rights were employed to justify the need for the new “water law” evoked above. The idea that there existed no private property in water, with the corollary that water could not therefore be sold, purchased, alienated,

²³ A typical example of the ‘old school’ is: D. S. M. Williams, “Land Reform in Turkestan,” *The Slavonic and East European Review* 51, no. 124 (1973): 428–38; Paolo Sartori, “Colonial Legislation Meets Shari‘a: Muslims’ Land Rights in Russian Turkestan,” *Central Asian Survey* 29, no. 1 (2010): 43–60, doi:10.1080/02634931003765514. For reasons unclear, Sartori’s important contribution goes unmentioned in: Ekaterina Pravilova, “The Property of Empire: Islamic Law and Russian Agrarian Policy in Transcaucasia and Turkestan,” *Kritika: Explorations in Russian and Eurasian History* 12, no. 2 (2011): 353–86. Pravilova focuses on the definition of *State* rights on the land according to Russian imperial law and therefore misses that the Russian imperial legal order, on the basis in particular of art. 255 of the Turkestan Statute, *did* recognize the natives’ full rights on the land on the basis of customs (which included Islamic law).

inherited, or endowed, seemed to be disproved already by documents from before the time of the conquest. An attentive observer like Nil S. Lykoshin remarked, for instance, that pre-conquest foundational documents of Islamic pious endowments (*waqfnama*) contained references to water quotas.²⁴ However, von Kaufman's "Temporary Rules" of 1877 stated that "all water belonged to the State" and that the population only enjoyed usage rights, while the allocation of water was (in principle) transferred into the hands of Russian experts. This derived, by and large, from the notion that this was what Islamic law decreed. Under Cherniaev, not only were the Russian *irrigators* dismissed and the allocation of water quotas handed back to largely native *aryk-aksakals* and *mirabs*. It was also explicitly stated that water rights should be regulated according to 'custom' (*obychai*) – a Russian bureaucratic expression that included local *shari'a* norms, complemented by (and confused with) 'customary norms' (*'adat, 'urf*). The reference to *obychai* as the set of norms that regulated the natives' rights on water was enshrined in art. 256 of the 1886 "Turkestan Statute" mentioned above. Similar to the rural land of the settled population of Turkestan, but unlike what happened in the case of the land of the nomads, the question of who ultimately owned the resource in question was left open.²⁵ Up until the first decade of the 20th century, the general assumption among Russian experts involved in agricultural and irrigation policy was that such *obychai* excluded private property and all that came with it (the right to dispose of water by sale, purchase, etc.). Another corollary was that rights over water was juridically (not merely economically) tied to rights over agricultural land, so that the former proceeded from the latter.²⁶

The problem, as (among others) agronomist A. I. Shakhnazarov wrote in 1908, was that this was hardly compatible with practical evidence from his time – not to mention the pre-colonial practices Lykoshin had documented. Shakhnazarov explained that demographic expansion had put new pressure on natural resources, and that "once the land became private property of the peasant, the water, too, had to become private property". In addition, he commented that, despite the formal abolition of von Kaufman's "Temporary Rules" under his successors, colonial authorities had indeed kept on intervening in the definition of water rights. This led to an ambiguous situation where "the customary order is *de jure* still in place, but *de facto* it is almost cancelled, because a lot of what before was decided by the [rural] community itself now is allowed [only] by the authority of the district commandant and of the engineer".²⁷ Count K.K. Pahlen, who conducted a thorough 'revision' of Turkestan one year later, shared the same bitter views.²⁸ Attempts to close this gap by 'codifying' customary rules in written form were equally doomed to failure.²⁹ In other words, changes in the chain of command for the distribution of water made customary rights on water

²⁴ Lykoshin, "Chapkullukskaia Volost' Khodzentskogo Uezda," 48.

²⁵ "The water in the major canals, streams, rivers, and lakes are given to the population for their usage, according to custom". See: *Polozhenie ob upravlenii Turkestanskogo kraia*, 12 June 1886, *PSZ* (1887), no. 3814, art. 256.

²⁶ G. Gins, "Deistviiushchee Vodnoe Pravo Turkestana i Budushchii Vodnyi Zakon," *Voprosy Kolonizatsii* 7 (1910): 145.

²⁷ A.I. Shakhnazarov, *Sel'skoe Khoziaistvo v Turkestanskom Krae* (SPb: Tipografiia V.F. Kirshbaum, 1908), 89.

²⁸ Konstantin K. Pahlen, *Otchet Po Revizii Turkestanskogo Kraia. Oroshenie.*, vol. XVI (SPb: Senatskaia Tipografiia, 1910), *passim*.

²⁹ Petr Komarov, "O Nuzhdakh Irrigatsii i Obychaiakh," *Sredne-Aziatskaia Zhizn'*, 1906, no. 58-59; in: *Turkestanskii Sbornik* (hereafter: *TS*), vol. 442, pp. 160-164.

meaningless, or only made them enforceable when they were translated into Russian positive administrative or legal measures.

If some, like Shakhnazarov, regretted the departure from a (possibly imaginary) 'golden era' when the burden of canal-cleaning works was equally distributed and nobody shunned their duties, others argued instead that the problem was not the erosion of customary norms, but hesitation in getting rid of them altogether. For this second category of observers, von Kaufman's early decisions had not been upheld strongly enough, so that a greedy native population encroached upon State rights on water. This front advocated a "water law" that would finally restore the supposedly pre-colonial Islamic legal principle of State supremacy in matters of irrigation, which made it paradoxically easier to obtain concessions for irrigation in the khanate of Khiva (a Russian protectorate), then in Turkestan itself.³⁰ A typical example of this position is found in the report of the head of the imperial Supreme Administration for Land Organisation and Agriculture (GUZiZ in acronym), A.V. Krivoshein. GUZiZ was the main promoter of resettlement to Central Asia, the Kazakh Steppe, Siberia, and the Far East, through its specialized Resettlement Agency and other departments (for instance, for forestry), charged with earmarking land for colonisation.³¹ For Krivoshein and his followers, lack of clarity in the property rights of the native population - a consequence of legal pluralism - was an obstacle. The same applied to access to water, which was crucial for agriculture in Central Asia's arid climate: hence the need for a "water law". This would put an end to the intricacy (*pestrota*), inconsistency, and purported corruption of customary rules as they had proliferated in around forty years of Russian colonial rule in the region.³² A "water law", thus, was the equivalent, in the legal field, of the introduction of 'modern' hydraulic engineering in the technical one: it would civilize, clarify, and open up the path for resettlement. In addition, for reasons explained below, without the "water law" new irrigation would have been impossible to implement on a vast scale.

Historians have been looking at the drafting of such "water law" and at the accompanying discussions both in the periphery and in the metropole. Alexander Morrison introduced the theme of the "water law" from the viewpoint of Turkestan but did not follow it to its conclusion, possibly because the latter fell beyond the timeframe of his research. In addition, Morrison did not relate the "water law" primarily to the debate about the relative roles of the imperial State and private entrepreneurs in fostering the expansion of irrigated land.³³ This angle has been instead privileged by most scholars of the topic, though sometimes with diverging interpretations. Muriel Joffe, in a

³⁰ Akifumi Shioya, "Who Should Manage the Water of the Amu Darya?: Controversy over Irrigation Concessions between Russia and Khiva, 1913–1914," in *Explorations in the Social History of Modern and Colonial Central Asia (19th – Early 20th Century)* ed. by P. Sartori (Leiden: Brill, 2013).

³¹ On the GUZiZ's ideology: Peter Holquist, "'In Accord with State Interests and the People's Wishes': The Technocratic Ideology of Imperial Russia's Resettlement Administration," *Slavic Review* 69, no. 1 (2010): 151–79; Beatrice Penati, "Managing Rural Landscapes in Colonial Turkestan: A View from the Margins," in *Explorations into the Social History of Modern Central Asia*, P. Sartori (Boston-Leiden: Brill, 2013), 65–109.

³² A.V. Krivoshein, *Zapiska Glavnoupravliaiushchago Zemleustroistvom I Zemledeliem O Poezdke v Turkestanskii Kray v 1912 Godu* (SPb: Gosudarstvennaia Tipografiia, 1912), 42–45.

³³ Morrison, *Russian Rule in Samarkand 1868-1910*, 235–37.

1995 article,³⁴ analysed the clash between the Russian cotton industrialists based in Moscow and in Ivanovo, on one hand, and the above-mentioned GUiZ, on the other. Although both of them desired the growth of irrigated acreage in Turkestan to increase the cotton output, the GUiZ related these goals more strongly to the resettlement of European peasants in the region and, consequently, to the supremacy of the imperial State in managing key resources such as land, forests, and water. The GUiZ line ultimately prevailed: private property in irrigation water (which the industrialists had requested, together with precise guarantees for their investments) was not recognized, and instead the “water law” established what Joffe dubbed a “hierarchy of users”. The State sat its apex, followed by domestic usage, and only subordinately irrigation and “industrial-technical” enterprises.³⁵ After much discussion, this formulation reserved for the State the function and ‘right’ of “supreme governance” (*verkhovnoe rasporiazhenie*) of Turkestani water resources. Joffe saw in this shift the proof that, in the end, the interests of ‘autocracy’ prevailed over those of ‘capitalism’.

It holds true, though, that the term “supreme governance” meant that the Russian State relinquished the idea that water was its “property”. This aspect is stressed in Ekaterina Pravilova’s work. Looking at the “water law” in Turkestan after having narrated the story of those for Transcaucasia and Crimea, Pravilova saw the solution of the ‘hierarchy of users’ and of the State’s “supreme governance” (which she equates to the notion of *dominium eminens* in Roman law) as proofs of the imperial State’s decision to foster the “de-privatisation” of water and regard it instead as a “common good” (*res publica*).³⁶ By giving up ownership on water, the State became instead “the embodiment of the common good”.³⁷ There remains the problem that, from the viewpoint of the average dweller of Turkestan, it made very little difference whether the State’s supremacy was defined as “property” or as *dominium eminens*. Unlike Joffe, Pravilova downplayed the importance of the ‘hierarchy of users’ outlined in the law: the recognition of the supremacy of the State’s interests (namely, the resettlement of peasants on the newly irrigated land) was clear *vis à vis* all other stakeholders, which included (but was not limited to) the Moscow industrialists.

Indeed, by focusing on the struggle between cotton industrialists and the GUiZ, one risks losing sight of the fact that the “de-privatisation” of water did not only encroach upon the rights of potential investors, but first and foremost upon the interests of the native population. One of Pravilova’s early publications on the topic even suggested that to make Turkestani water a *res publica* really meant the possibility for all to enjoy access to it.³⁸ In other words, both these

³⁴ Muriel Joffe, “Autocracy, Capitalism and Empire: The Politics of Irrigation,” *The Russian Review* 54, no. 3 (1995): 365–88.

³⁵ *Ibid.*, 382.

³⁶ Ekaterina Pravilova, “Les *res publicae russes*. Discours sur la propriété publique à la fin de l’empire,” *Annales. Histoire, Sciences Sociales* 64^e année, no. 3 (2009): 588–93.

³⁷ *Ibid.*, 593.

³⁸ Pravilova partly corrected herself in 2014 by admitting that “[b]y keeping ‘public’ water under its strict control, the government tried to preserve a specific form of economy in the region: peasant economy based on small individual households organized through the state-led policy of resettlement”. This statement, however, still wrongly suggests that the solution found in the “water law” was meant to serve the interests of the *native* small-holding peasantry (the “specific form of economy” of Turkestan), rather than (as was in fact the case) introducing Russian peasant settlers.

important and very influential works deal with the “water-power” nexus, but do so in a way that captures only a small part of the day-by-day workings of colonial power in Turkestan. Both Pravilova and Joffe participate in the ‘imperial turn’ in the study of power relations in the Russian empire, by studying the struggle between competing stakeholders around scarce water. Yet, their perspective objectively ends up neglecting the viewpoint of the overwhelmingly majority of the population of the colony.

Knowledge as power: the advance of hydraulic engineering

A third way in which recent historiography has dealt with the “water-power” nexus in pre-revolutionary Central Asia is characterised by a focus on new irrigation projects, usually on a vast scale and by means of modern hydraulic engineering, both through devices and machinery, and specialized knowledge. This important stream in historiography results more from political history (or, at least, what McNeill called “political environmental history”),³⁹ than from the history of science and technology. In particular, until very recently the profiles of those (individuals and institutions) engaged in the introduction and spread of ‘modern’ engineering methods to Central Asian irrigation were under-studied.

The most important contributions here have come from Julia Obertreis, who in a 2008 article outlined the pre- and post-revolutionary activities of prominent irrigation experts, such as F.P. Morgunenkov, N.A. Dimo, and G.K. Rizenkampf, whilst also sketching out the formation of the first generations of locally trained specialists, thanks to the establishment of specialized institutes.⁴⁰ Obertreis’s focus was initially on the way these and other individuals and organizations articulated the question of ‘modernity’ and of a ‘cultured’ (*kul’turnyi*) usage of water resources, yet her 2017 monograph also discusses more technical aspects, such as materials, machinery, and new concepts (e.g. the hydromodule).⁴¹ Maya Peterson’s dissertation (now also a published monograph), while narrower in its chronological scope, also straddles the revolutionary divide.⁴² Peterson explicitly situates her study in the field of global environmental history, linking what happened in Central Asia the global push for hydraulic engineering “schemes” at the same time and stressing the circulation of personnel, models, and specialist knowledge. As with Obertreis, Peterson has paid attention to the educational and ideological background of those in charge of irrigation, particularly to their attitude toward native irrigation technology. While we are still far from the extensive study of scientific expertise on water one encounters in scholarship on the British empire, for instance,⁴³

Compare: Pravilova, “*Les res publicae russes.*”; Ekaterina Pravilova, *A Public Empire: Property and the Quest for the Common Good in Imperial Russia* (Princeton: Princeton University Press, 2014), 125.

³⁹ J. R. McNeill, “Observations on the Nature and Culture of Environmental History,” *History and Theory* 42, no. 4 (2003): 5–43.

⁴⁰ Julia Obertreis, “‘Mertvye’ i Kul’turnye’ Zemli: Diskursy Uchenykh i Imperskaia Politika v Srednei Azii, 1880-E - 1991 Gg.,” *Ab Imperio* 4 (2008): 208, 215–16.

⁴¹ Julia Obertreis, *Imperial Desert Dreams: Cotton Growing and Irrigation in Central Asia, 1860-1991*. (Göttinger: V&R unipress, 2017), *passim*.

⁴² Peterson, “Technologies of Rule: Empire, Water, and the Modernization of Central Asia, 1867-1941.”; Peterson, *Pipe Dreams*.

⁴³ E.g. David Arnold, *Science, Technology and Medicine in Colonial India* (Cambridge University Press, 2000), 39–41.

Priya Satia, “Developing Iraq: Britain, India and the Redemption of Empire and Technology in the First World War,” *Past*

parts of Obertreis's and Peterson's monographs offer unprecedented glimpses into the topic.⁴⁴ The logical next step would be to frame such research more decidedly in terms of the history of science and technology, especially the history of scientific "expertise": by retaining a focus on the 'usual' questions of area studies and regional history, typically colonialism, cotton, and resettlement, both these historians undersell some of the most original parts of their contributions.

Indeed, the 'imperial' or 'colonial' nature of the irrigation schemes under study is one of the crucial themes of these two contributions, although with slightly different emphases: Peterson's analysis includes some attention to "indigenous Central Asians who both cooperated with and subverted these tsarist and Soviet attempts",⁴⁵ and she is particularly sensitive to the valorization of native knowledge and practice in irrigation – a topic on which opinions diverged within the Russian field itself.⁴⁶ Both books ultimately regard irrigation, its infrastructure, and its policing as embodying specific ideas about modernity and even 'civilisation' – ideas that could result in "cooperation, compromise, and conflict" with native "intentional actors".⁴⁷ Yet Obertreis, who consecrated proportionally more space to the post-1917 era, used the expansion of the cotton sector as a key to study such processes, while Peterson devoted some of her most insightful pages to the expansion of irrigation for the cultivation of other crops, most notably in the Chu valley.⁴⁸

These distinctions notwithstanding, the two books converge in the way they ultimately estimate the importance of Tsarist new irrigation experiments in comparison to the subsequent Soviet achievements. Both historians interestingly use the term *dreams* in their titles, although Peterson is more ready to explicitly acknowledge the limitations and failures of such projects, including in their intention to convey Western modernity.⁴⁹ Although both studies are ideally situated to producing a comparison between the situation the Russians found and the impact of pre- and post-revolutionary policies, both contain a degree of ambiguity and stop short of admitting that new irrigation in Tsarist Central Asia brought relatively modest results *vis à vis* the pre-existing native irrigation networks - while its limited scale relative to Soviet schemes, especially after WWII, is much clearer.⁵⁰

To some extent, the emphasis on colonial big irrigation projects is the natural product of the authors' choice of topic. Where the ambiguity on their evaluation of Tsarist plans is more problematic, is in the exploration of the nexus between the pre-war 'cotton boom', new irrigation,

& *Present*, no. 197 (2007): 211–55; Mark Harrison, "Science and the British Empire," *Isis* 96, no. 1 (2005): 56–63; David Gilmartin, "Imperial Rivers: Irrigation and British Visions of Empire," in *Decentering Empire: Britain, India, and the Transcolonial World*, ed. by Durba Ghosh & Dane Kennedy (New Delhi: Orient Longman, 2006); David Gilmartin, "Scientific Empire and Imperial Science: Colonialism and Irrigation Technology in the Indus Basin," *The Journal of Asian Studies* 53, no. 04 (1994): 1127–1149.

⁴⁴ See in particular: Peterson, *Pipe Dreams*, 129–30.

⁴⁵ Peterson, *Pipe Dreams*, 6.

⁴⁶ See esp. the case of Grand Duke Nikolai Konstantinovich: Peterson, *Pipe Dreams*, 76, 79, 107–8.

⁴⁷ Peterson, *Pipe Dreams*, 13.

⁴⁸ Peterson, *Pipe Dreams*, ch. 4.

⁴⁹ E.g. Peterson, *Pipe Dreams*, 69–70, 182.

⁵⁰ Another risk implicit in the focus on large irrigation projects is to forget small-scale investments in pumping stations by local entrepreneurs and Europeans alike. See e.g.: "Gor. Khodzhent," *Sankt-Peterburgskie Novosti*, no. 138 (1909).

and resettlement. This nexus should be studied on three distinct levels: the first is that of the *actual* relation between new irrigation and the expansion of the acreage under cotton in Central Asia, mentioned just above;⁵¹ the second is that of the relation between these two goals, and of the relation between them and resettlement, as *policy goals*; the third, is that of the public rhetoric of policy-makers, which might or might not reflect actual goals. Starting from the latter two, many doubts arise from an objectively ambiguous foundational document authored by the head of GUiZ, the above-mentioned Krivoshein, after his tour of Central Asia, where he described his view of a “New Turkestan” as defined by resettlement (*zaselenie*, rather than *pereselenie*), irrigation, and cotton.⁵² While nobody has yet attempted to reconstruct the drafting process of this report, if one reads this document together with others, as Joffe has done,⁵³ Krivoshein appears more interested in new irrigation for the establishment of Russian peasants (itself a way to Russify and securitise the imperial periphery), than as a way to expand the cotton acreage. Yet, he still mentioned cotton because of the private and public interest in it as the commodity that could make Turkestan an asset rather than a liability for the empire. Very appropriately, thus, Obertreis acknowledges that, vanishingly small exceptions notwithstanding, resettlement was regarded as a vent for Russia’s land hunger on newly irrigated land and did not go hand-in-hand with the expansion of the cotton acreage – unsurprisingly given that Russian peasants were much less skilled at growing it than the indigenous population.⁵⁴ However, if admittedly the link between Tsarist new irrigation and the growth of land under cotton was a weak one, why does this very link provide the framework through which Obertreis looks at the pre-revolutionary period?

Peterson’s position on the reciprocal relation between resettlement, new irrigation, and cotton has undergone some changes, as reflected in the difference between her dissertation and subsequent monograph. In the former, rather than affirming the existence of a link between more cotton and new irrigation, she primarily rejected the existence of a strong “irrigation-resettlement” nexus instead.⁵⁵ Yet that little happened in practice on the “irrigation *cum* resettlement” front does not allow us to infer that irrigation was meant for cotton-growing instead.⁵⁶ In her monograph,

⁵¹ Incidentally, it is inexact to call this phenomenon or goal “cotton monoculture”, as Morrison does, thus attracting Peterson’s criticism (compare: Morrison, *Russian Rule in Samarkand*, 234; Peterson, “Technologies of Rule”, 151.) The Tsarist regime simply did not have the tools of state power to systematically exclude crops other than cotton. Furthermore “monoculture” was regarded with suspicion into the 1920s, even after collectivization: N. Ivanov, “O Monokul’ture Khlopka v Uzbekistane,” *Za Rekonstruktsiiu Sel’skogo Khoziaistva*, no. 6 (September 1929): I–XII; N. Balashev, “K Voprosu O Monokul’ture Khlopchatnika,” *Za Rekonstruktsiiu Sel’skogo Khoziaistva*, no. 8 (November 1929): 22–26.

⁵² Krivoshein, *Zapiska Glavnoupravliaiushchago Zemleustroistvom i Zemledeliem o Poezdke v Turkestanskii Kray v 1912 godu*. The term *zaselenie* in this document refers not only to agricultural settlements, but also to mining and fishing.

⁵³ Joffe, “Autocracy, Capitalism and Empire.”

⁵⁴ Obertreis, *Imperial Desert Dreams*, 111-3. Obertreis (109) is also ready to acknowledge native agency in the expansion of irrigation for cotton-growing.

⁵⁵ This is referred to the period at least from *ca.* 1907, as still in 1914 “the tsarist government had done little in the way of irrigation that would encourage colonization”: Peterson, “Technologies of Rule,” 179.

⁵⁶ As Peterson justly noted already in her dissertation, it is true that Imperial Estate at Merv was a large-scale irrigation project and was mainly sown under cotton, but she herself explained that it was a State-run plantation using indigenous (not settler) labour. One may also add that the Imperial Estate at Merv was established at a time when large cotton plantations were regarded as efficient: see *e.g.* V.I. (prince) Massal’skii, *Khlopkovoe Delo v Srednei Azii ... i Ego Budushchee* (SPb: Tipografiia V. Kirshbauma ministerstva finansov, 1892), 17–21. A similar mistake is to be found in

Peterson appears more clearly skeptical about the existence of a valid relation between new irrigation and the cultivation of cotton – let alone between the latter and the activity of European settlers. Some ambiguity persists, though, in the chapter on later projects in the Hungry Steppe, which actually contains plenty of solid evidence of the fact that the ‘cotton boom’ predominantly happened on land untouched by new irrigation projects, and through the agency of thousands of Turkestani peasant smallholders.⁵⁷ Again, one wonders what the connection is between the “white gold fever” (which played out, by the author’s own admission, on native lands supplied by older irrigation networks), and Russian plans for the irrigation and *zaselenie* of the Hungry Steppe (which, again by the author’s admission, could not have hoped to increase the cotton acreage).

In sum, a degree of reticence is clear when it comes to admitting that Tsarist new irrigation (and, even less, resettlement) had very little to do with the expansion of cotton, from the viewpoint of real crop distribution and even of the most mature and eventful colonial policy-making in this field (e.g. Krivoshein’s “New Turkestan”). If a connection is to be seen, it must be found in the overall rhetoric of those who presented Russia’s colonial endeavour as economically worthwhile; alternatively, one can follow Peterson when she explains how resettlement for the cultivation of grain and other foodstuffs in the Chu valley (and the steppe) would have *indirectly* stimulated cotton by securing an additional - and closer - source of food.⁵⁸

All in all, neither Obertreis nor Peterson ultimately subscribe to the idea that new irrigation was meant for European peasants to grow more cotton, but seem to hesitate when it comes to putting to rest the very persistent idea that new irrigation was a decisive part of the Central Asian cotton boom.⁵⁹ The reason why these historians persist in endorsing - albeit hesitantly and implicitly - the idea of an *actual* link between new irrigation and cotton is arguably to be found in their wish to discuss these topics across the 1917 divide, which leads them to interpret Tsarist policy as an anticipation, however imperfect, of Soviet development strategies. To admit substantial discontinuity in this respect (even admitting it from other viewpoints, e.g. technical personnel) would undermine precisely the idea of an underlying similarity between Tsarist and Soviet plans for Central Asia’s modernity.

Going back to the main question – how power over water has been envisioned by the historiography on “new irrigation” in Tsarist Central Asia - the discussion above shows to what extent this third scholarly ‘stream’, despite its focus on technology and knowledge, is still predominantly concerned with performative or non-performative texts. In addition, while the pioneering works of Obertreis and Peterson have started to clarify the relation between knowledge

Morrison, when he reports (correctly) that “90 per cent of [cotton] was grown on small native plots ... dependent on pre-existing canals” as a proof of the fact that new irrigation “was not intended” for cotton: where cotton was *actually* grown has little to do with the government’s intention. That Krivoshein’s new irrigation was mainly meant for *zaselenie* is a separate issue.

⁵⁷ Peterson, *Pipe Dreams*, 134-42.

⁵⁸ Peterson, *Pipe Dreams*, 169.

⁵⁹ See the very influential: Sven Beckert, *Empire of Cotton: A New History of Global Capitalism*. (London: Penguin, 2014), 352. Compare: Beatrice Penati, “The Cotton Boom and the Land Tax in Russian Turkestan (1880s–1915),” *Kritika: Explorations in Russian and Eurasian History* 14, no. 4 (2013): 742.

and power in the management of Central Asian water (often using Scott,⁶⁰ Mitchell,⁶¹ or Foucault as theoretical frameworks or sources for inspiration), the risk remains one of forgetting about proportions: power relations implicit in these projects represented an exception rather than the rule for the vast majority of the population of Turkestan. An overall different approach is that of Teichmann, who considers this notion by James C. Scott as misleading when applied to the USSR. The German scholar sees in disorder, rather than in technocratic plans, the main tool through which the Soviets ruled in Central Asia, especially in the domain of water.⁶²

In sum, the issue of “how much” these pre-revolutionary projects *really* mattered (for the native peasants, the settlers, the cotton output...) must be kept in mind, not to confuse their impact with that of Soviet “hyper-modernity” (or Soviet intentional chaos and violence, as Teichmann has it). If one asks, “what power have we been talking about so far?”, one sees that, even in the ‘stream’ in principle most sensitive to the materiality of water usage and technical (rather than politico-juridical) questions, the importance of large irrigation projects is over-estimated because of the interest, for the historian, of testing for the presence of ideological continuities between pre- and post-1917 notions of modernity and social change, or to theorise the relations between revolution, violence, and the transformation of nature.

Who paid for the water?

In the three sections above, I have tried to explain the potentials and the limitations of the existing historiography on the “water-power” nexus in pre-revolutionary Turkestan. To wrap up the considerations expressed at the end of each of the three sub-sections (on the power of the colonizers and of their collaborators; on the clash between different notions of water rights; and on new irrigation projects based on modern engineering), one can go back to some of the statements of the introduction and observe that the three dominant ‘streams’ in historiography so far have something in common: the attention to *discourses* on water management and water rights, to the underlying *ideologies* and prejudices (from mistaken opinions on ‘Islamic law’, to uninformed judgements on indigenous technology), and to the way some measures were *justified* in front of a metropolitan or local audience.

These levels of analysis are fully legitimate, but one could contend that they are missing two important aspects: the first is that of actual flows of material resources (water of course, but also labour for the maintenance of the canals). In more Marxist parlance: by leaving these aspects out of our research frameworks so far, we are in danger of ignoring important *structural* elements. How was labour exchanged against water? How much did water ‘cost’, both in terms of participation in the annual *corvées* and (something neglected here) when it was exchanged or endowed as *waqf*?

⁶⁰ James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (Yale University Press, 1998).

⁶¹ Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (University of California Press, 2002).

⁶² Teichmann, *Macht der Unordnung*.

Did such cost correspond to the value of the crops that such water allowed them to cultivate? What made water more or less expensive (or 'valuable')?

The second aspect we risk forgetting about is that of power relations *within* Turkestani rural society, both between villages (especially within a district or a province), and between households in the same village. All the three 'streams' in historiography we have considered above deal, in one way or the other, with the same power relation, however complex: that between colonizers and colonized, which is regarded in turn through the prism of the administrative pyramid, of the definition of the boundary between different legal systems on issues of water, and finally of "technologies of rule" in the field of new irrigation. It is this power relation that acted as a vehicle for the ideas of modernity which new or improved irrigation embodied. As hinted at in the introduction, this is where we see most distinctly the impact of the Post-colonial turn in Central Asian history, with research questions defined primarily around ethnic cleavages. One would be tempted to conclude that the post-colonial turn has gone too far and we need to turn back, so to say. Alternatively though, one may argue that the post-colonial turn has not gone far enough yet: when do we hear the subaltern speak? Where do we see how system of domination within or across villages determined their sufficient and timely access to water?

All in all, by leaving out these two aspects, we risk treating water and power in Tsarist Turkestan in ways that frame it as something 'other' from, say, the Po valley, the Tennessee valley, or the Low Countries. The danger, in other words, is of covertly adopting an Orientalist viewpoint on the question or, more exactly, to formulate our questions in ways that insist on the peculiarity and incommensurability of the field under our eyes. It is true that we are not confronted with cultural reductionism *à la* Timur Kuran,⁶³ as denounced by Mårtensson and Shatzmiller⁶⁴ for the history of the Arab Middle East. Yet, a "materialist approach" like theirs would only be beneficial at this stage, because it would nicely complement what historians have done so far.

This is why at this point I would like to suggest, in a purely speculative way and, as of now, with very limited positive results, looking at power relations within Turkestani rural society (*between* villages) and at the value of water (in the sense of the *labor* required to access it), and to do so through the prism of the *naturopovinnost'*. This word can be translated as "duty to be paid in kind" and it consisted in the provision of unpaid labour by villagers to clean the canals and to restore or put in place again the devices (*karabury*, dams, etc.) that allowed the distribution of water through them. In the Tsarist period, the *naturopovinnost'* was regulated by 'custom' and was the aspect of the native irrigation system that the Russian administration most struggled to understand, maybe together with native units of measurements on water. The *naturopovinnost'* was therefore allocated by the *aryk-aksakals* and the *mirabs* to each individual village in terms of days/man. Although one can easily surmise that, in each village, some households managed to exempt

⁶³ Timur Kuran, *The Long Divergence: How Islamic Law Held Back the Middle East* (Princeton University Press, 2010).

⁶⁴ Shatzmiller, "Economic Performance and Economic Growth in the Early Islamic World"; Mårtensson, "Introduction."

themselves (including by paying someone else, *e.g.* a co-villager or a vagrant wage labourer), this intra-village allotment of the *corvée* remains very opaque to the historian.

The *naturopovinnost'* was known locally as *hashar*, a term that is still used now to refer to Soviet-style unpaid collective work (*subbotnik*) or to the service that households offer to each other within a village or an urban *mahalla*.⁶⁵ Among others,⁶⁶ another name for this service in the region was *qazu* (literally, “to dig”), for instance in Qunghrat Khiva; the amount of *qazu* to be provided by each village or by individual landowners was specified in documents on taxation.⁶⁷ Both the imperial and the early Soviet administration in Central Asia would use the term *naturopovinnost'* to designate this labour duty. This *corvée* did not include the work on minor distribution canals, but only on the main ones (*magistraly, aryks*): a rigorous calculation of the value of water should take this ‘micro-level’ into account, too, but we do not have any source, and there is some evidence that it was not as grievous as the inter-communal *hashar*.⁶⁸ The *naturopovinnost'* was maintained as a separate duty (to be paid in kind, that is, as labour, or in cash) until the middle of the 1920s, when it was gradually replaced by the “standard land tax” on water, land, and livestock alike.⁶⁹

The only way in which the Russian colonial authorities could make sense of the irrigation *corvée* was to look at it ‘phenomenologically’, so to say. In other words, they let it happen, and then recorded how many days/man it amounted to. Peterson has revealed both the extent and the substantial limitations of attempts to have the *aryk-aksakals* record both water usage and the *corvée*.⁷⁰ Confronted with the patchiness of these efforts by the colonial administrative machine, from 1900 the Department for land amelioration of the all-Russian GUZiZ started sending enquiry teams to various localities in Central Asia, in order to study the local irrigations and finding means of ‘reforming’ it.⁷¹ Between 1913 and 1915, these teams collected extremely detailed data on numerous cantons in the core provinces of Turkestan (Fergana, Samarkand, Syr-Darya). These data, available as rough ‘cards’ for each village, are now kept in the Russian State Historical Archive.⁷² Each card contains information about the population (classified by age and sex), the number of

⁶⁵ On the meaning of *hashar* in nowadays Uzbekistan (in reference to Samarkand): Christilla Marteau d’Autry, “Vyjdem vse, kak odin! ‘Allons-y tous comme un seul homme!’ Ethnographie d’un hashar national dans un quartier de Samarkand, Ouzbékistan,” *Cahiers d’Asie centrale*, no. 19–20 (December 12, 2011): 279–301; see also: Marco Buttino, *Samarqanda: Storie in Una Città Dal 1945 Ad Oggi* (Roma: Viella, 2015), *passim*.

⁶⁶ Survey of local terms in: A. Abdulkhamidov, *Iz istorii narodnoi irrigatsionnoi praktiki v zone predgorii Uzbekistana v XIX-nachale XX vv.* (Tashkent: Fan, 1981), 128, as reproduced in: Vincent Fourniau, “L’irrigation et l’espace özbek: Des modes d’implantation ethno-sociale dans l’Asie Centrale du 16^e au 19^e siècle” (thèse de doctorat, EHESS, 1985), 497-8.

⁶⁷ See many examples in the documents reproduced in: M.Yu. Yuldashev, *K Istorii Krestian Khivy XIX Veka* (Tashkent: Fan, 1966).

⁶⁸ Shakhnazarov, *Sel'skoe Khoziaistvo v Turkestanskom Krae*, 101–4.

⁶⁹ See: B. Penati, “Continuities and Novelities in Early Soviet Law-Making about Central Asian Water.” *Journal of the Economic and Social History of the Orient* 62.4 (2019): 674-730.

⁷⁰ Peterson, *Pipe Dreams*, 69-70.

⁷¹ “Фонды / 432 / Описи / Ф. 432 Оп. 1 / Общая Информация,” accessed April 29, 2016, <http://fgurgia.ru/object/27808197>.

⁷² For this paper, I have been using the following files: RGIA, f. 432, op. 1, d. 388-389, 393-394.

households, the nature of the land (irrigated or rain-fed), the crop mix, and - what it is most interesting here – the *naturopovinnost'* for each village.⁷³

The following paragraphs aim at illustrating the potential of this *corpus* for the study of power relations surrounding water within native Turkestani society, especially between villages located in the same province, the same water system and, when possible, along the same *aryk* or its proximity. Because of the granularity of the information available and the difficulty in identifying reliably some toponyms, given their changes over time, this preliminary study is based on a small sample of 125 villages from the Samarkand *oblast'* and district (*uezd*). The latter were included in the cantons (*volosti*) of (from east to west) Tuya-Tartar, Palvan-Aryk, Dagbit, and Dzhoy-Divana on the right of the Zeravshan valley, and Mahala, Siab, Angar, and Daul on its left. These cantons cover many major canals, such as the Bulungur and Aq-Darya to the right and the Dargom, Siab, and Angar to the left. After a first recognition of patterns at the district level, special attention will be paid to the Miankal oasis, enclosed between the Aq-Darya and the Qara-Darya (*i.e.* the main course of the Zeravshan in this segment), and more specifically to the Dagbit *volost'*, where the more precise localization of 23 villages along four local *aryks* (Kiyat, Dzhar, Shahab, and Chardzhuy) has been possible.⁷⁴

Although fairly systematic, this data collection remains challenging for the historian to exploit. First, the cards seldom report a fixed and clear number of days/man for each village. Villagers most often reported a minimum and a maximum value for the number of people mobilized, the number of days (sometimes, half-days), and the times they were called to work. Less often, a distinction is made between “annual works” and “repairs” (*remont*); more seldom do the ‘cards’ mention work on each *aryk* the village depended upon. Only in around one-third of the sample does one find no difference between minimum and maximum *naturopovinnost'*, whilst in the most extreme case the minimum could be as little as one-fifth of the maximum. This variability between years represented no doubt a challenge to any attempt to forecast a standard yearly contribution by village or by household. Villagers were more likely to report little to no annual variability on the right bank of the river; such variability also seems to increase, overall, the more one moves downstream along the Zeravshan, and appears to have been smaller for the Tuya-Tartar and the related Bulungur. Although an overall pattern is hard to discern, one may note that these were relatively old *aryks* in less populated areas stretching between the Samarkand oasis and the Hungry Steppe.

Whilst allowing for annual variability, what was the *naturopovinnost'* for each village based upon? Both Tsarist and early Soviet observers optimistically thought that each household (and, by extension, each village) would contribute its fair share, because the right to water went

⁷³ The ‘cards’ also report the cost of labour in each village in case someone employed a wage labourer to satisfy his *naturopovinnost'* obligations.

⁷⁴ Compare: *podotdel z/u* for Samarkand, hand-traced maps, 1926 (TsGARUz f. r-226, op. 1, d. 52, ll. 34-35); the map of the Samarkand province in: V.V. Zaorskaia – K.A. Aleksander, *Promyshlennye zavedeniia Turkestanskogo kraia*, Vyp. 1 (Petrograd: Ekaterinskaia tipografiia, 1915), map 7; 1:250,000 survey map, *Samarkand* (Washington, DC: AMOB, Corps of Engineers, U.S. Army, 1952); and canal descriptions from: L.N. Sobolev, *Geograficheskie i statisticheskie zavedeniia o Zeravshanskom okruge* (SPb: Tipografiia Imperatorskoi Akademii Nauk, 1874), 17-26.

theoretically together with the right to land. They assumed that then there would be some proportion between the land possessed, the water used (even factoring in the kind of crop), and the labour to be provided.⁷⁵ But was this assumption correct? Was *naturopovinnost'* proportional to the total agricultural land, even supposing a share of fallow and unproductive land in each village? Our data show that the variability of the *naturopovinnost'* per *desiatina* of land is enormous. Whether one looks at the minimum or the maximum values, and even excluding massive outliers, the standard deviation amounts to 90 per cent of the average, which signals extreme dispersion.⁷⁶ We can therefore exclude that the *corvée* depended on the total amount of land. The *corvée* per unit of irrigated land shows a similar degree of dispersion. Alternatively, one may look at the acreage under rice as a proxy for both the value of agricultural output and/or the amount of water actually received, given the 'thirstiness' of this crop. Rice was widely cultivated in the Samarkand district at the time, especially in Miankal, and it is found in most of the villages included in this sample.⁷⁷ Even when calculating the *naturopovinnost'* relative to the rice acreage, though, no correlation is visible.⁷⁸ In sum, payments were not clearly proportional to the water villages were indeed using. If water rights went together with land rights, as the Tsarist administration liked to believe, surely the duties connected to such rights were not commensurate.

One could surmise that the availability of the labour force available would sometimes be a factor in the calculation: a village would therefore 'pay' on the basis of the number of households, including those who did not devote themselves to irrigated agriculture but, for instance, to services and crafts. The picture, here again, is one of extreme variability. Even when excluding one outlier at the top end (Margelan-Tepa, NW of Dagbit, on the Chardzhuy), the range for minimum *naturopovinnost'* per household goes from 1.6 to 62 day/man per year, with a median of 12.4 and an average of 18.5, with a first and third quartile at 1.6 and 24.8 day/men respectively. Interestingly, however, one can see some patterns in the *naturopovinnost'* per household, which was - broadly speaking - lower in the Palvan-Aryk canton. This does not mean, however, that *naturopovinnost'* per household was necessarily higher in the upstream, right-bank, rather arid *volosti* considered here: informants reported much higher values in neighbouring Tuya-Tartar, perhaps because depopulation had occurred. In the Dagbit canton the *naturopovinnost'* per household was also relatively high, but with big oscillations from one year to the other. As seen above, such annual variations were much smaller in the upstream part of this segment of the Zeravshan. What is certain is that there was no inverse relation between the *naturopovinnost'* to be provided and the daily wage of workers: in Palvan-Aryk labour was cheaper than in Dagbit, but villages in the former *volost'* contributed a smaller number of day/men. It was this kind of scenario that made Tsarist administrators think about turning the *corvée* in kind into a monetary tax, to be then used to recruit labour where it was cheaper.

⁷⁵ Trombachev, *Voprosy Sel'skogo Khoziaistva I Irrigatsii Turkestana*, 114–22.

⁷⁶ In all cases, I have excluded dubious information and extreme outliers.

⁷⁷ I have omitted villages where the crop mix is unspecified, together clear outliers and other ambiguous cases, this reducing the sample to 93 across all the same *volosti*.

⁷⁸ Whether one looks at minimum or maximum values, $R^2=0.1$.

The picture becomes even more complicated, though, if one looks beyond the total *naturupovinnost'* to be paid, to distinguish between the “annual works” and the “repairs”. Focusing on the maximum values, here the situation is reversed: villagers in the Dagbit *volost'* managed to pay less per household than those in Palvan-aryk. Taking into account also the smaller annual oscillations in the latter, one may surmise that inhabitants of the more intensively cultivated, more densely populated Miankal ‘island’ faced a more irregular but still quite intensive mobilization in response to adverse events, if compared to their neighbours to the east, where labour was mobilized through the *corvée* in a more regular manner.⁷⁹

[Fig. 1 here.]

A more interesting set of observations emerge if one looks in greater detail at the individual canton of Dagbit, situated in the westernmost corner of the Miankal ‘island’, and at its four main canal systems, here listed from south to north: the Chardzhuy, derived to the right of the Qara-Darya to the south; the connected Shahab and Dzhar,⁸⁰ with water derived from the Aq-Darya in the middle of the *volost'*; and the Kiyat, running from the Aq-Darya and back into it in the north. A simplified diagram of irrigation in this canton, with approximate distances and a selection of villages only, is **above**. In reference to the total *naturupovinnost'* due per household or even per *desiatina* of irrigated land, users of the Kiyat and Dzhar canals ‘paid’ comparatively more – especially the former.⁸¹ If estimated relative to the number of households, the picture is very similar when looking at the “annual works” part of the contribution, with villages along the Dzhar and the Kiyat all or predominantly above median (and, for half of those along the Dzhar, in the top quartile). The picture is reversed if one considers the “repairs” component alone, though, suggesting that within the Dagbit canton (*i.e.* eastern Miankal), the regular mobilization of labour was a more common feature along the northern canals derived from the Aq-Darya, in contrast to the localities along the Chardzhuy. Yet the Chardzhuy and Dzhar-Shahab systems originated at around the same point in time: according to Sobolev, they had both been dug around three centuries before on the initiative of the Naqshbandi *shaykh* Khoja Ahmad Kasani Makhdum-i A'zam, whose shrine was (and is) venerated in Dagbit.⁸²

Further observations show how, the three villages at the very end of the Dzhar canal (Kara, Katta-Kumushkent, and Dzharkishlak) reported very high contributions for annual works, with little variability between years. On the Shahab-Dzhar system, similarly the per household contribution of downstream villages (Durman, Balkhi, Kyrk-Niyaz) was comparatively heavy. (This is not true when

⁷⁹ This greater irregularity in Dagbit seems confirmed by the fact that this canton also displayed relatively low *minimum* values of labour per household conferred for annual works.

⁸⁰ Sobolev (*Geograficheskie i statisticheskie zavedeniia*, 24-25) does not distinguish between the Dzhar and Shahab but reports the second only; the 1926 map by the *podotdel z/u* for Samarkand (TsGARUz f. r-226, op. 1, d. 52, ll. 34-35) identifies the Dzhar, while the tables from RGIA with *naturupovinnost'* values report the Shahab separately.

⁸¹ In particular, localities on the Kiyat are consistently in the top quartile in reference to the total *naturupovinnost'* and for the maximum estimates of the “annual works”, when weighed on acreage.

⁸² Beyond Sobolev (*ibidem*) no evidence seems to have survived of Makhdum-i A'zam as a ‘canal digger’. I am grateful to Thomas Welsford (private email, 22.8.2020) and Paolo Sartori (24.8.2020) for having shared their notes and thoughts on this.

one weighs the same *naturopovinnost'* per *desiatina*, which may have been the effect of depopulation, or of more extensive agriculture.) Vice versa, villagers in Darkhan, at the very head of the Dzhar canal on the Aq-Darya, reported a relatively low *corvée* per household, mostly under the label of “repairs”. This pattern seems to be broadly consistent with the idea that, the lower a locality along a stream, the heavier were *naturopovinnost'* contributions relative to the size of the population the more downstream one advanced – all this, against the background of a fundamentally erratic and inconsistent mechanism.

The Kiyat canal, on the other hand, stands out in the whole of the *volost'* because, when measured relative to the number of households, contribution to “repairs” was virtually identical along the whole of its stream. It is tempting to hypothesise that this happened because the Kiyat flowed into the Aq-Darya; the Dzhar-Shahab system, by contrast, was prone to siltation and seems to have lacked a clear downstream outlet by the late Tsarist period, although Sobolev, a few decades before, reported that it was connected to the Dzhoy-Divana canal and, through it, back to the Qara-Darya. Sobolev is silent as to the origin of the Kiyat canal, and anyway the above-mentioned contrast between Chardzhuy and Shahab-Dzhar suggests that this is not an important variable. Perhaps more relevant was the fact that the Kiyat was the deepest of all the canals in Miyankal and one of the deeper ones in the whole of the Samarkand oasis.⁸³ This configuration suggests that consistent and significant labour had to be extracted along the course of the Kiyat to maintain its functionality.

This is of course a *very preliminary* exploration, which I have included here more as a provocative example of what is possible, than as a plausible research result. A more complete study should not only include a larger sample (if possible, all the ‘cards’ kept in RGIA and described above), but also use more sophisticated techniques, for instance by combining several possible explanatory variables for *naturopovinnost'* at the same time. Furthermore, the interest of applying GIS to this study is self-evident, but I fear such an attempt would be frustrated by the lack of availability of decent maps for this period, as toponyms do not necessarily coincide with those we see today. All in all, though, this exploratory study points at the naivety of those who claimed that, because the irrigation system was guided by millennia-old custom, water and costs were allocated fairly: that there was no discernible relation between land, irrigated land, or rice on one hand, and labour duties on the other, is clear even at the naked eye. There is another possible interpretation, though: maybe, as Shakhnazarov and others noted, it was because of the advent of private property deals on land, that custom had been ‘corrupted’ and a fair allotment of irrigation costs had become impossible. This is a question that could only be answered if we found a similar database for the pre-colonial or yearly colonial years: only in this way could we see whether inequality had always been there, or had indeed grown under Tsarist rule. What we can see by now, is that popular wisdom was right: those with better access to water (that is, for instance,

⁸³ Sobolev reports that water in the Kiyat was 1.5 *sazhen* (or 2.7 m), while the canal itself was sometimes 5 *sazhen* deep. The depth of all other canals was measured in *arshin*, with even the Dargom being maximum 3 *arshin* (2.1 m) deep. Only the mountain part of the Tuya-Tartar was deeper than the Kiyat (*Geograficheskie i statisticheskie zavedeniia*, 22-25).

those who could cultivate rice on their land) were indeed in a position of advantage – if they were not paying less because of their position, for sure they were not paying more either.

In this respect, the materiality of water, as reflected in the importance of the location of a field for access to this resource, was at the origin of very meaningful social distinctions within native rural society. As the proverb cited in the title goes, the effect of this materiality on the well-being of a household (and of entire villages) was even greater than that of the institutions that presided over water, for instance the *mirabs*. Preliminary data on *naturpovinnost*⁸⁴ allows one further step: the material level (*i.e.* access to water because of a field's position) was reflected, however imperfectly, in the institutional/normative level: those who had access to enough water to be able to cultivate more land and to plant more profitable crops (*e.g.* rice) enjoyed a social position of privilege in that their duties did not correspond to their rights. The most acute Bolshevik observers did indeed see in this inequality a form of stratification that could be exploited for revolutionary purposes.⁸⁴ In a similar way, the historian who is looking for meaningful categories of analysis for the study of social structures and conflicts in Central Asia (and in other hydraulic societies) should be sensitive to these categories, which really mattered for the historical actors themselves.

⁸⁴ Teichmann, *Macht der Unordnung*, 12.

Fig. 1

