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Borderlands of Industrial Modernity

Explorations into the History of Technology in Central Asia, 1850–2000

JONAS van der STRAETEN

ABSTRACT: Central Asia is among the world regions that are least explored in terms of their history of technology. This essay reviews a wide array of academic literature that can serve as a base for historical research on technology and material culture in the region. It furthermore explores some of the most promising conceptual avenues for such an endeavor. The metaphor of a borderland, it argues, can be used beyond its geographical meaning to conceptualize the region's technological landscape. This landscape has been shaped by the coexistence of traditional artisanal practices and material cultures, the industrial and architectural legacies of Soviet rule as well as the region's recent reemergence as a hub between Russia, China, Europe, and the Middle East. Based on case studies from different disciplines, this essay therefore discusses technology's role in creating borderlands or territoriality, statehood, production, and everyday life in Central Asia.

Introduction

Dressed in traditional Uzbek clothes, the farmers in front of the small clay hut are rejoicing, some are blowing fanfares. One farmer critically examines the wooden bridge over the small creek in front of the hut. Will it withstand the weight of the technological marvel that has just arrived? The scene is shown in the diorama “The first tractor in Uzbekistan” at the Polytechnical Museum in Tashkent. The museum holds fascinating lessons in both the constructive side of automobile technology and the constructive side of history. A few steps further on the polished marble floor, one finds posters on the origins of the agricultural machinery industry in Uzbekistan, captioned with a quote by former president Islam Karimov: “The history of these days—it is our history, the people’s history. It is impossible to abdicate one’s history.” Then, the historical exhibition swiftly transforms

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into a showroom of Uzavtosanoat (short: Uzavto), a holding company that today controls almost all the automotive industry in Uzbekistan.

In post-Soviet Central Asia today, it seems, the official historiography of technology is not least a self-affirmation of having arrived in industrial modernity.¹ The narratives it produces are a muscle-bound answer to allegations of the region's technological backwardness, probably most vividly illustrated by Stalin's ranking of the peoples within the Soviet Union along a scale of "development" and "sophistication" in the early 1920s. While Armenia and Georgia were among the top places, Central Asia ranked last. In the view of Moscow, the region was the epitome of backwardness.² For a long time, scholarly literature on technology in Central Asia was implicitly organized along the binary of tradition and modernity. While one category of research comprised mostly ethnographical studies on traditional crafts and artisanry, the other was concerned with imported modern technologies and their—often detrimental—local impacts: the irrigation projects, railway lines, and hydropower dams that have become emblems of state authoritarianism in (post-)Soviet Central Asia.

Between tragedy and triumphalism, discourses on tradition and modernity, I argue in this essay, there is a fertile middle ground for research on technology in Central Asia. This middle ground can be best explored by looking at the borderlands of industrial technology. Craft-based apparel producers who draw on the knowledge obtained in Soviet institutions; "assemblages of mobility" in the cities that include refurbished minibuses along with Soviet-era trolleybus systems; elaborate methods of private house building in the shadows of Soviet mass housing; shop floor workers that resist the effects of privatization by working extra hard—for a historiography of technology, that "has become more inclusive, richer in scope, more imaginative and more critical of modernist triumphalism" in recent years, Central Asia appears as a rewarding region to study.³ Based on a review of recent academic literature and ongoing research projects, I explore some of the most promising conceptual avenues for historical research on technology and material culture in Central Asia.

In doing so, I aim to provide an orientation and a base for discussion

1. Writing about technology in Central Asia requires some important definitions and delimitations, starting with the slippery concept of Central Asia as a distinct region. While the broadest definitions, e.g. the one by UNESCO, also include northeastern Iran, Pakistan, northern India, western China and Mongolia, this article focuses on literature on the five "-stans" that constitute the former Soviet Central Asian republics: Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan, and Kyrgyzstan, plus Afghanistan. The studies under discussion cover a period from 1850 to the present day, though the focus of this essay is on Soviet and post-Soviet Central Asia. If necessary, I have also consulted other studies on technology in the (post-)Soviet world.

2. Douglas Northrop, "Nationalizing Backwardness."

3. Wladimir Sgibnev and Andrey Vozyanov, "Assemblages of Mobility"; Francesca Bray, "Flows and Matrices," 8.

between two research communities that have yet to engage in a fruitful exchange. The history of technology community, for its part, has barely taken notice of Central Asia despite the emerging trend to investigate non-Western forms of scientific or technological practice. In its major journals, such as *Technology and Culture*, *History and Technology* or *ICON*, case studies from the region are virtually absent.⁴ Within the Central Asia studies community, in turn, a relative lack of interest in technology and materiality becomes evident in the thematic clusters of its major conferences during the last years: Anthropology, cultural studies, economy, education, history, international relations, language and linguistics, literature and the arts, politics, religion, and society are the lenses through which most scholars look at the region—science and technology notably are not.⁵ In recent years, however, an increasing number of scholars in this community have asked for the material constitution of state, sociality and daily life in Central Asia. Their published (and partly forthcoming) works will be discussed here in light of some major theoretical debates in the history of technology.

What makes Central Asia such an interesting empirical case for these debates, then? Before turning to this question, it is important to recapitulate two of the discipline's major biases that have arguably prevented scholars from looking at Central Asia, along with other supposedly "peripheral" world regions. The first is its general preoccupation with invention and innovation. In 2007, David Edgerton shook up the field with *The Shock of the Old*.⁶ The book offered numerous thought-provoking examples of allegedly outdated technologies that have shaped the course of history more profoundly than some of the most sophisticated inventions. Rather than conflating novelty with significance, Edgerton asks us to write a history of technology as a history of technology-in-use.

Expanding the scope of investigation from the detached realm of "technology" to the material world in which people actually live can help to address a second major bias: The assumption that new "technologies" are invented and first implemented in what is commonly understood as the "Global North"; the "West" or the "industrialized countries"—and then reach the rest of the world in a process which has been described with the help of metaphors like "dissemination" or the idea of a directed "technology transfer." In almost all of these stories "modern" technologies come to replace "traditional," less efficient technologies.⁷

The Soviet Union had its own version of this narrative that jumbles up

4. The only exception I found was a study by Jenifer van Vleck, "An Airline at the Crossroads of the World," on an Afghan Airline during Cold War.

5. Note the absence of contributions that focus explicitly on technology at recent conferences of the Central Eurasian Studies Society (CESS) and European Society for Central Asian Studies (ESCAS).

6. David Edgerton, *The Shock of the Old*.

7. Daniel Headrick, *The Tools of Empire*.

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its key terms. Some of the most transformative attempts by the Soviet administration to engineer social and natural environments in Central Asia, for example, took place under the banner of “decolonization.”⁸ Rejecting the official Soviet rhetoric, however, scholars of Central Asia have argued that the USSR, like its Tsarist predecessor, was a colonial empire.⁹ Even though the transformative effects of Central Asia’s forced modernization under Soviet rule are hard to deny and are probably unique in global comparison, they were never all-encompassing.¹⁰ Quite to the contrary, Central Asia offers a particularly colorful display of Edgerton’s argument: There, the everyday life of technology is characterized by the coexistence of the infrastructural and industrial legacies of its Soviet period, artisanal practices and material cultures that date back to the pre-Soviet time, and by the changes brought by the rapidly accelerating circulation of goods, tastes, and ideas in post-Soviet years. The coexistence of these different influences, however, is not always a harmonic one. It constantly leads to in-between situations, tensions, and paradoxes.

Hence, not only in the narrow geographic meaning of the term, Central Asia often appears as a borderland. The metaphor of a borderland, I argue here, is well suited to explore the significance of technology for territoriality, statehood, production, and everyday life throughout different parameters of time, space and culture in Central Asia. It will therefore serve as a structuring device for this review essay.

Starting with Central Asia’s geographical location as an historical borderland and transit area between China, Russia, Europe, and the Middle East, the first section is concerned with the conditions under which technology has begun to move during different periods in the history of Central Asia. It examines what current historical and anthropological studies on the region reveal regarding the modes and directions of these movements, the encounters they produced, and the mediators and brokers involved. It asks for the reactions to these movements that could range from refusal to mutual influences, malleability, and mutual reinvention. The second section explores the borderlands of statehood in Central Asia, both in terms of territory and power. It examines the role of technical infrastructure as an instrument for engineering social and natural environ-

8. Gerhard Simon, *Nationalismus und Nationalitätenpolitik in der Sowjetunion*; Artemy M. Kalinovsky, “Not Some British Colony in Africa.”

9. This is an ongoing and multi-faceted debate. For two noteworthy contributions see, for example, Ulrich Hofmeister, “Kolonialmacht Sowjetunion;” Douglas Northrop, *Veiled Empire*.

10. The Sovietization of Central Asia has been extensively discussed and differentiated in historical research on fields such as religion, gender, urban planning, or the formation of a Central Asian Soviet intelligentsia. See for example Adeeb Khalid, *Making Uzbekistan*; Adeeb Khalid, *Islam after Communism*; Northrop, *Veiled Empire*; Marianne Kamp, *The New Woman in Uzbekistan*; Moritz Florin, *Kirgistan und die sowjetische Moderne*.

ments and for producing distinct, bounded spaces of statehood. This section also emphasizes the paradoxes of system building in Central Asia. The region's history is full of instances in which the construction of large technical infrastructures rather than ordering and rationalizing the state apparatus resulted in (or was symptom of) chaos and fragmentation, and where it led to the disintegration of space.

The third section looks beyond industrial technology as it explores the borderlands of production in Central Asia. Taking concepts of continuity and immobility as a point of departure, it looks at Central Asia's rich history of crafts and artisanal practices both in their quality to create material goods as well as local identities. It critically re-examines the notion of traditional crafts, arguing that crafts and the industrial sector have converged considerably. Knowledge gained in different industrial contexts has also stimulated the widespread do-it-yourself culture in Central Asia. The fourth section turns to the borderlands of everyday life: By investigating everyday practices of building, working, and moving in Central Asia both in historical and contemporary contexts, I argue, the grand narrative of industrial modernization or decline needs to be complemented or corrected with nuanced historical accounts. These accounts show Central Asia as a site of hybridity and creativity but also of ambiguity and paradoxes.

I return to the introductory example to illustrate one of these paradoxes: While official history writing narrates agricultural mechanization as a triumphal march of mechanical harvesters and tractors, Western observers have been puzzled by the fact that in the 1950s, just at the high point of mechanization, child labor became entrenched in cotton harvesting in Central Asia.¹¹

Silk Road, Crossroads, or Dead Ends? Technological Encounters and Movements on the Asian Periphery

One of the most rewarding new trends in the historical study of technology is the rise of a global history perspective that leads an increasing number of scholars in the field to analyze "the circulation and exchange of things, people, ideas, and institutions."¹² While such metaphors like "flows" or "circulation" to describe the global movements of technology have brought a necessary corrective to older diffusionist conceptions, they often lack empirical substantiation.¹³ Central Asia appears as a particularly promising region for such an endeavor. Its geographical location has historically made it the site of cultural and therefore technological exchange along the ancient network of trade routes that connected East Asian cultures with those around the Mediterranean Sea. At present, the image of

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11. Shoshana Keller, "The Puzzle of Manual Harvest in Uzbekistan."

12. Sebastian Conrad, *What Is Global History?* 5.

13. Jonas van der Straeten and Ute Hasenöhl, "Connecting the Empire."

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this “Silk Road” is being evoked again in China’s “One Belt and One Road Initiative.” The scheme has already boosted the commercial exchange between China and its Central Asian neighbors that was re-activated after Sino-Soviet rapprochement. It has also drawn considerable scholarly attention. Some anthropologists, however, have questioned the explanatory value of “Silkroadism” and called for actor-centered, empirically grounded analyses instead of “metageographical projections” of Silk Road connectivity.¹⁴ Their call should be taken up for a broader historical analysis of the movement of things, knowledge, and practices within and beyond Central Asia, that will be discussed here.¹⁵

This analysis might start with the cultural diversity of the region itself. In fact, the symbiosis of sedentary and nomadic life was the foundation for the cohabitation of peoples in Central Asia. Iranian and Turkic lifestyles, for example, not only complemented each other economically; they were intertwined in mutual dependencies. The most important nodes in this relationship were bazaars and market days that allowed for exchange and conflict resolution.¹⁶ In his study on tent types and textiles of pastoral nomads, Klaus Ferdinand unveils an astonishingly high degree of specialization and dependency. He traces, for example, how the material culture of the Ghilzai nomads in Eastern Afghanistan changed in the context of trade and migration through areas inhabited by settled communities with a distinct division of labor, including specialized craftsmen.¹⁷

Cultural encounters, however, were of course not limited to peaceful trade. The history of Central Asia can also be written as a succession of invasions by Persians, Mongols, and Turks, of cultural subordination and of migratory movements. The flows of technology and cross-cultural material solutions that resulted from these encounters remain a lacuna for research. The same applies for the technological dimension of the “Great Game,” the political and diplomatic confrontation between the British and Russian Empires over Afghanistan and its neighboring territories in Central Asia. An important turning point was the year 1865, when an army of the Russian Tsar succeeded to conquer Tashkent. In the immediate years after, Russia gradually established control over large areas of Central Asia. Compared to other colonial empires, however, the actual outreach of Russia in the region remained relatively moderate. Within the heterogeneous administrative structure of the region, some areas retained a certain degree of independence as protectorates.¹⁸

Still, under Russian colonial rule, Central Asia witnessed its first large-scale economic intervention from outside: In the three decades between

14. Henryk Alff, “Introduction”; Hasan H. Karrar, *The New Silk Road Diplomacy*.

15. Cf. Manja Stephan-Emmrich and Philipp Schröder, *Mobilities, Boundaries, and Travelling Ideas*.

16. Maria Eva Subtelny, “The Symbiosis of Turk and Tajik.”

17. Klaus Ferdinand, “Material Culture of Pastoral Nomads.”

18. John M MacKenzie, “The Conquest and Administration of Turkestan.”

1885 and 1914 Russia stepped up its attempts to turn Central Asia into one of the largest producers of cotton worldwide.¹⁹ The cotton boom catalyzed the introduction of industrial technologies to the region, especially through the construction of railway lines; namely the Trans-Caspian Railway, which was begun in 1879 and reached Samarkand in 1888, and the Trans-Aral Railway, which opened in 1906. It also gave rise to capitalist labor relations and forms of large enterprise that persisted after the Soviet conquest of Central Asia, as Penati's study on national textile trusts in the Uzbek SSR illustrates.²⁰ Notably, the technological base for the intensification of cotton farming was the introduction of "American" long-staple cotton varieties and not the construction of large-scale canal systems and dams. Modernization did not necessarily imply the complete rejection of traditional technologies. Russian specialists working in agricultural research stations, for example, acknowledged—at least in private—that their European agricultural technology was inferior to indigenous irrigation methods. In fact, the first large-scale experiments to introduce European hydraulic engineering to the region resulted in grandiose failures.²¹

The encounters of European engineers, experts, and state workers with Central Asian social and natural environments is well researched, probably not least because it has left most visible traces in the archives. Most of these works focus on the first decades of Soviet rule in Central Asia. During that period, Soviet expatriate state workers were commanded to rebuild and modernize a region that was on its knees after the revolutionary chaos and the brutal conquest by the Bolsheviks in the years 1917–20. Their experiences, as documented in several recent studies, refute any notion of a controlled and directed transfer of technology from the Soviet center to its Central Asian periphery.²²

Instead, they argue that the conditions under which technology circulated during early Soviet rule must be understood in terms of their paradoxes: while the Soviet governments claimed to modernize society, they produced neo-traditional relations, in Central Asia as elsewhere in the Soviet Union.²³ Despite the rhetoric of decolonization, the Soviet project was driven by more sweeping ideas of transforming society than the former Tsarist administration. Soviet hydraulic engineers regarded indigenous peoples and their technologies as backward and inefficient.²⁴ Not-

19. Beatrice Penati, "Managing Rural Landscapes in Colonial Turkestan"; Julia Obertreis, *Imperial Desert Dreams*.

20. Beatrice Penati, "The Hunt for Red Orient."

21. Obertreis, *Imperial Desert Dreams*, 74–76. Christian Teichmann speaks of a broader and more open consensus among Russian experts about the superiority of indigenous irrigation methods, Christian Teichmann, *Macht der Unordnung*, 35.

22. Botakoz Kassymbekova, "Helpless Imperialists;" Maya Peterson, "Engineering Empire;" Christian Teichmann, "The Red Man's Burden."

23. Flora J. Roberts, "Old Elites under Communism."

24. Kassymbekova, "Helpless Imperialists;" Maya Peterson, "US to USSR;" Teichmann, *Macht der Unordnung*.

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withstanding the hostilities between the Bolsheviks and the Western countries, the communists' seemingly transnational ideology attracted thousands of Americans to the Soviet Union. Environmental historian Maya Peterson examines the case of U.S. irrigation experts who provided "technical assistance" in Soviet Central Asia.²⁵ Her analysis, however, is limited to the experts' perception of the local conditions and their disillusionment about a part of the Soviet Union they perceived as a "partially mechanized country of medieval barbarity."²⁶

These deficiency narratives remain the major (if not only) perspective on technological movements and encounters during the Stalinist period. Technology primarily appears as an arena (one is prone to say battleground) for the myriad of conflicts over resources and power that characterized Soviet rule in Central Asia. At the same time, the Stalinist industrialization offensive by and large remained limited to a few light industry enterprises and a handful of prestige projects before WWII.

The war profoundly changed the dynamics of industrialization and re-configured Central Asia's connection to the Soviet Union. In the first years of the war, the region's cities experienced a sudden industrialization rush, when they received heavy industry that had been hastily disassembled in the European part of the USSR and sent eastward by train to save it from the advancing German troops. The arrival of refugees and evacuees from front-line cities, and later of deportees of various ethnicities from all over the Soviet Union, not only altered the social set-up of the region, but also led to encounters and exchanges of technological ideas and knowledge. Central Asian cities saw an explosion of the number of technical experts and skilled industrial workers. Many evacuated specialists also gained firsthand experience with local living conditions and "traditional" technologies for the first time. Some architects praised traditional building techniques for their cost-efficiency and adaptability to local conditions, even though these voices soon became silent in postwar discourses on urban modernization.²⁷

The Stalinist period, as some Russian scholars suggest, has much shaped the perception of Soviet rule in Central Asia in Western academia.²⁸ The fact that one of the most instructive recent studies on "Sovietness" in post-Stalinist Soviet Central Asia has only been published in the Russian language is therefore regrettable. It is the monumental book *Soviet Kishlak*, a historical ethnography of a village in northern Tajikistan by Sergey Abashin, one of the few Soviet-trained anthropologists who has successfully overcome the boundaries between Soviet and Western scholarship.²⁹ His book has been lauded both for its "thick description" of the village society

25. Peterson, "US to USSR."

26. Quote from the US-American consultant Willard Gorton, cited in *Ibid.*, 457.

27. Paul Stronski, *Tashkent*, 100–1.

28. Sergey Abashin, "'Ideal'nyi kolkhoz' v Sovetskoi Srednei Azii."

29. Sergey Abashin, *Sovetskii kishlak*.

and the multi-perspectivity of its interpretation.³⁰ It shows that the Sovietization of the village was only fragmentary, and “Soviet” practices coexisted and overlapped with other practices that were considered “Muslim,” “national,” or “traditional.” For example, most kolkhoz members worked on collective lands only sporadically and spent most of their time with other activities such as animal husbandry or handicrafts. People’s living environments hence must be understood as a “mosaic, consisting of multiple subspaces, mixed chaotically with each other.”³¹ Abashin calls attention to the discrepancy between common narratives of Sovietization and its manifestations and perceptions on the ground.

As concerns the post-Stalin era, there still remains much ground to cover. In 2018, for example, Artemy Kalinovsky stated that “ongoing discussions about the Soviet Union, Central Asia, and the history of post-colonial and Cold War era development . . . rarely intersect.”³² This intersection, however, is key to understanding the transformation of Central Asia’s post-WWII technological landscape. In the 1950s, under Nikita Khrushchev, the Soviet Union renewed its engagement with the former colonies that now became known as the Third World. For the “developing countries” in Africa, Asia (especially India and Afghanistan), or Latin America, Central Asia and the “Soviet South” were now promoted as a development model that would lead the way from technological backwardness and colonial suppression to socialist modernity. Central Asian expertise, for example on irrigation or agricultural mechanization, was sought after in affiliate socialist countries.³³ It can be considered a particular merit of Kalinovsky’s recent book on Central Asia as “laboratory of socialist development” that he not only describes the changing paradigms of development on the level of high politics and intellectual debates, but also traces them down to the biographies and experiences of individual peasants, workers, scholars, and engineers in the Tajik SSR.

The transfer between Central Asia and the “Third World” has also been studied from the perspective of the receiving countries. These studies focus on the local appropriation of Soviet technologies that were designed along principles of standardization, rationalization, and universal applicability. The Soviet large-panel system for the construction of housing blocks is one of the most illustrative examples. In Uzbekistan and Kazakhstan, architects tried to embed local cultural traditions in socialist architecture through ornamentation of the facade panels.³⁴ At the same time, these countries were

30. For an extensive discussion of the book in English, including reviews from Artemy M. Kalinovsky, Charles Shaw, and Jesko Schmoller and a response by Abashin, see *Central Asian Affairs* 4 (2017): 293–304.

31. Abashin, *Sovetskii kishlak*, 610.

32. Artemy M. Kalinovsky, *Laboratory of Socialist Development*, 200.

33. Obertreis, *Imperial Desert Dreams*, 334–39.

34. Stronski, *Tashkent*, 55.

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important testing grounds for Soviet building technologies and served as models for “tropical” socialist countries like Cuba. After receiving training in Kazakhstan, Cuban engineers redesigned the large-panel system to render it feasible for conditions on the island, and thus, as Hugo Palmarola and Pedro Ignacio Alonso argue, they created a hybrid Soviet-Cuban technology.³⁵ The authors also highlight the role of the Soviet Central Research Institute for the Experimental Planning of Housing in facilitating the construction of large-panel factories not only in the Soviet Union, but also in countries like Yugoslavia, Mongolia, Afghanistan, Iran, Vietnam, Cuba, and Chile. These case studies feed into an emerging debate on how the “other,” non-Western globalizers shaped the different forms of global connection and entanglement that emerged within socialist and non-aligned contexts in the second half of the twentieth century.³⁶

An investigation of Central Asia’s technological entanglements and exchanges within a globalized world also needs to consider the reconfiguration of networks through which things, practices, or tastes move. After the breakup of the Soviet Union and its command economy, informal trade networks—which had never ceased to exist—gained new importance. There is a rich anthropological literature on trade in Central Asia, including several studies by Magnus Marsden on trans-regional Afghan trading networks across China and the former Soviet Union, Rune Steenberg’s work on Sino-Kyrgyz cross-border trade, or Henryk Alff’s research on interaction, trade, and bazaar economy at the Kazakhstan-China border.³⁷ The anthropological debate on Central Asia’s global connections has been considerably advanced with the recent publication of Till Mostowlansky’s book *Azan on the Moon*, an in-depth ethnographical study of the people along the Pamir highway that connects Central Asia with China and Afghanistan. It documents how China’s rise in Central Asia challenges and reinforces ideas of modernity, for example regarding construction, technology, media, or development.³⁸ More publications on trade are forthcoming from a current joint research project on bazaars, informal markets, and trade in Central Asia. Taking up the line of inquiry opened by schol-

35. Hugo Palmarola and Pedro Ignacio Alonso, “Tropical Assemblage.”

36. See for example the conference on “The Other Globalisers,” 6–7 July 2017, University of Exeter, UK, www.hsozkult.de/conferencereport/id/tagungsberichte-7471. The conference had more of an economic focus, though. See also the recent conference “Exporting Socialism: Intercultural Transfer, Circulation and Appropriations of Architecture in the Cold War Period,” 21–22 June 2018, Leibniz Institute for Research on Society and Space, Erkner, DE. The focus here was on architecture. An edited volume of the contributions is forthcoming.

37. Magnus Marsden, “Crossing Eurasia”; Marsden, “From Kabul to Kiev”; Marsden, *Trading Worlds*; Rune Steenberg, “Embedded Rubber Sandals”; Henryk Alff, “Profiteers or Moral Entrepreneurs?”; Alff, “Getting Stuck within Flows.”

38. Till Mostowlansky, *Azan on the Moon*.

arship on “globalization from below,” the project’s specific interest lies in “individually forged transnational linkages that bypass state regulation.”³⁹

As this scholarship demonstrates, Central Asia is a site of movement and of encounters between different technological cultures. Yet as Sujit Sivasundaram warns us, in our attempts to integrate technology into trans-regional or global narratives, “mobility should not be stressed to the extent that immobility, disjuncture, and the workings of the local are forgotten.”⁴⁰ One of the key questions for the following sections is therefore how to conceptualize the interplay between global processes and local events, between mobility and the immobile in Central Asia.

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System Builders and Border Builders: Technical Infrastructures, Violence, and the State

Beyond its importance as a site of technological encounters, Central Asia stands out for the role large-scale technologies have played in the making and unmaking of statehood and territoriality, particularly under Soviet rule. In his book *Seeing Like a State*, James Scott describes the collectivization of Soviet agriculture as a prime example of authoritarian high-modernist planning.⁴¹ Scott’s book has become the key reference in a research tradition on the relationship between state authoritarianism, science, and technology that has considerably advanced in the last two decades. In this debate, historians working on Central Asia have been among the most vocal in critically revisiting or differentiating Scott’s key argument about the pernicious effects of large-scale social engineering attempts by the state. Abashin criticizes Scott, who is admittedly no expert on the Soviet Union, for generalizing results from a case study that is limited in both its temporal focus on the Stalinist period and its geographical focus on the European Russian part of the Soviet Union.⁴² In his analysis of the economic failures, Abashin argues, Scott loses sight of the wider transformation which resulted from collectivization. Using his micro-study of a kolkhoz in Tajikistan, he points out that individual perceptions of the kolkhoz system were more positive than the macro narratives suggest.

While agreeing with Scott on the disastrous outcomes of early Soviet modernization attempts in Central Asia, Christian Teichmann criticizes Scott’s conceptualization of the state as homogenous superstructure. In his book *Macht der Unordnung* (The power of chaos), Teichmann offers an

39. Arjun Appadurai, *Modernity at Large*; Susanne Fehlings and Hasan Karrar, “Informal Markets and Trade”; See also Fehlings, “Informal Trade and Globalization.”

40. Sujit Sivasundaram, “Sciences and the Global,” 158.

41. James C. Scott, *Seeing Like a State*; See also the discussion in van der Straeten and Hasenöhr, “Connecting the Empire.”

42. Scott, *Seeing Like a State*, 193; Abashin, “‘Ideal’nyi kolkhoz,” 2–3.

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interpretation of Stalinist rule in Central Asia that rejects the narrative of a Soviet state which consolidated and expanded its rule over Central Asia by incorporating its natural and social environment into its high-modern, centralized, and rationalized state apparatus. Chaos, fragmentation, and misery, Teichmann argues, were not only the accompanying symptoms but the very substance of Stalinist rule.⁴³ Accordingly, all too often European Soviet officials and experts ended up as “helpless imperialists,” as the title of a study by Botakoz Kassymbekova suggests: Poor, hungry, ill—as weak as the institutions they were supposed to represent and subject to arbitrary penalty whenever the central plan was not fulfilled.⁴⁴

A detailed analysis of Soviet statecraft is key to understanding some of its technological paradoxes, for example the surge of child labor in Central Asian agriculture just after the start of the massive mechanization programs under Khrushchev. Shoshana Keller argues that simple economic explanations need to be substantiated with a detailed analysis of how economic incentives and disincentives, gender relations, demographics, and state policy worked together. Though she does not challenge the economists’ claim that manual labor ended up being cheaper and more efficient than mechanical harvesting, she does argue that low labor costs were “an unwanted result of how the state itself functioned.”⁴⁵

Julia Obertreis’s main point of critique, on the other hand, is that the ideology of “high modernism” is of a “completely ecumenical character” and hence can be located in a variety of historical contexts, be they (post-)colonial, developmental, socialist, or capitalist.⁴⁶ Although she acknowledges its value as a conceptual point of departure for her historical study on cotton growing and irrigation in Central Asia, she critically rejects the explanatory power of “high modernism” for historians. Its claim for general applicability, she argues, tends to obscure questions of context-specific political circumstances, consequences, actor groups involved and their educational backgrounds, or the role of official discourses and professional ethics.

Her voluminous book traces these aspects in the field of agriculture in great detail throughout the entire period of Russian colonial and Soviet rule in Central Asia. For Central Asia, Obertreis situates high modernism—or at least its high point—between the late 1940s and late 1960s, a period notably not characterized by crises, war, or political upheavals—the preconditions that Scott claims to be the most fertile breeding grounds for high modernist

43. Teichmann, *Macht der Unordnung*; Teichmann, “So gräbt man Gräber, keine Häuser”; Teichmann, “Wildscapes in Ballyhooland.”

44. Kassymbekova, “Helpless imperialists”; Teichmann, “The Red Man’s Burden.” The edited volume by Reinkowski and Gregor Thum in which Teichmann published his study carries the same title as Kassymbekova’s paper, “Helpless Imperialists.”

45. Richard Pomfret, “State-Directed Diffusion of Technology”; Keller, “The Puzzle of Manual Harvest in Uzbekistan,” 306.

46. Quote in Scott, *Seeing Like a State*, 342; critique of Scott in Obertreis, *Imperial Desert Dreams*, 39.

faith. Obertreis draws on one of the strengths of high modernism as a conceptual approach, namely its simultaneous analysis of transformation schemes for society and nature. In a chapter on the “crisis years” from 1970 to 1991, she thus connects her study of irrigation schemes to a much wider debate of their disastrous environmental consequences in Central Asia, most visibly signified by the desiccation of the Aral Sea.⁴⁷

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Scholarship on Soviet mega-engineering projects in Central Asia complements a series of monographs on the grand industrial projects of the Stalinist period, such as Stephen Kotkin’s *Magnetic Mountain*, on the giant steel complex and city of Magnitogorsk, or Anne Rassweiler’s earlier study of the Dneprostroi Dam.⁴⁸ Within this tradition, the first extensive study of Central Asia is Matthew Payne’s book on the construction of the Turksib (Turkestan-Siberian) railroad between 1927 and 1931.⁴⁹ Payne not only examines the practical, economic rationale behind the project, but also the ideological motives. For the Stalinist government, the Turksib was to serve as a “forge of the Kazakh proletariat” transforming formerly colonial subjects into authentic members of the ruling proletariat.⁵⁰ Despite hinting at the social conflicts and the “unstable identity somewhere between accepted citizen and marginalized colonial” among the Kazakh workers, his book is criticized for insufficiently substantiating its aim of “positioning the Kazakhs as agents of their own modernization.”⁵¹

While power is the underlying concept for most studies on large infrastructures in Central Asia, another strand of research uses concepts of space as point of departure. Since the spatial turn in the 1980s, an increasing number of studies has set out to investigate the role of infrastructures in the making and unmaking of distinct, bounded spaces in colonial contexts.⁵² In their historical study on infrastructures in the “making of Europe,” Högselius et al. warn of viewing system building as a linear process of increasing connectivity among countries and regions. Consequently, they analyze the construction of transport and communications infrastructure in Europe not only from the perspective of system builders, but also with regard to “border-builders seeking to control and delimit long-distance flows of people, goods, and information.”⁵³

47. The debate on James Scott’s theses among scholars of Central Asia involved more contributions as can be discussed here. See for example Christine Bichsel, “The Draught Does Not Cause Fear.” The high presence of scholars working on Central Asia in debates on environmental history—in contrast to history of technology—is noteworthy.

48. Stephen Kotkin, *Mountain*; Anne D. Rassweiler, *The Generation of Power*.

49. Matt Payne, *Stalin’s Railroad*.

50. Matt Payne, “The Forge of the Kazakh Proletariat?”

51. Ibid., 299; Siegelbaum, Review of *Stalin’s Railroad*.

52. See for example Manu Goswami, *Producing India*; Fredrik Meiton, “The Radiance of the Jewish National Home.”

53. Per Högselius, Arne Kaijser, and Erik van der Vleuten, *Europe’s Infrastructure Transition*, 23–24. For Central Asia, the analytical benefit of concepts like “border-

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Rather than connecting spaces and people, the first large infrastructure projects in Central Asia by Tsarist Russia created disruptions and conflicts. Shioya cites the example of the New Lawzan Canal in the Khanate of Khiva. The construction of the canal started in 1894 as part of a large plan to divert the Amu Darya river to the Caspian Sea. Despite its ultimate failure, the canal interfered with local irrigation practices and led to prolonged ethnic conflicts between Uzbeks and Turkmen.⁵⁴ The establishment of Central Asian Soviet Republics entailed the delicate task of reorganizing the ethnically diverse region along national borders. In her historical micro-studies of these processes of national delimitation, Beatrice Penati has analyzed the interdependencies between agrarian policies and border-making in the Fergana valley.⁵⁵ As Madeleine Reeves argues for the Fergana Valley during the late Soviet period, however, the divisive effects of national borders were overlaid by the ability of Soviet collectivization policy to integrate different linguistic communities into shared socialist spaces.⁵⁶

When the Soviet Union disintegrated, decades of sedentarization, collectivization, and the relocation of settlements had made the Fergana Valley a complex and contested borderland, pervaded by a border that resembled a chessboard. In a rich tradition of borderland ethnographies in Central Asia, Reeves's study is one of the most recent and illuminating. She analyzes the everyday life of what she calls "border work": the "messy, contested, and often intensely social business of making territory 'integral.'"⁵⁷ The account of a bus ride provides an illustrative example of how technical infrastructures become an integral part of "border work": During her first field research in the region in 2004, the bus crossed the new international border no fewer than six times. When she returned in 2008 a new bypass road, funded by the European Union, connected the Kyrgyz villages without crossing the border. Both cross-border movement and interethnic encounters were considerably reduced.⁵⁸

The permanent technical structures in which people live and work in Central Asia are more than a backdrop for the analysis of social change and movement. The history of system building in Central Asia should also be regarded as a history of border-building, and of border conflicts which arose from the political partition of an infrastructurally and economically highly integrated, ethnically diverse space into several independent (post-) Soviet nation states.

builders" and "system-builders" remains to be proven. In a review of the book, Julia Obertreis laments that these two concepts are neither introduced nor critically reflected, and put the construction and expansion of infrastructures at the center of attention, rather than their actual use. Obertreis, *Review of Europe's Infrastructure Transition*.

54. Akifumi Shioya, "Povorot and the Khanate of Khiva."

55. Amanda Farrant, "Mission Impossible"; Beatrice Penati, "Life on the Edge"; Penati, "Managing Rural Landscapes in Colonial Turkestan."

56. Madeleine Reeves, *Border Work*.

57. Ibid., 6.

58. Ibid., 48–49.

Crafting Central Asia: Borderlands of Production

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When we write about technology, what matters and how? According to Francesca Bray, the answer to this question in “Global” or “World history” is still a biased one. The crucial markers of significance, Bray explains, are movement and transformation. In asking how technologies “moved us forward,” or at least came to replace other ways of making and doing, global histories are nearly exclusively concerned with domains of activity that were key to the formation of the modern West, for example mining and textile production, ship-building and weaponry, and the different fields of engineering.

Such history seldom makes space for the cosmic, ritual, or symbolic dimensions of technologies or for their role in stabilizing and maintaining social systems. However rich in symbolic meaning technologies like building houses or weaving baskets or darning socks might have been, however indispensable they were to the pattern of the social fabric, religious fulfillment, or political cohesion, they are identified with what Fernand Braudel called “the brakes” as opposed to “the accelerator” of history, and thus find little place in these historical frameworks.⁵⁹

For Central Asia, the kind of analysis Bray suggests has been largely the realm of anthropologists. Yet a domain that allows for tracing continuities and disruption over a long period is the history of crafts. Overviews of arts and crafts in Central Asia exist, such as a comprehensive, multivolume atlas of crafts and a monograph by Skallerup.⁶⁰ A more recent volume on crafts and material culture covers both the Middle East and Central Asia.⁶¹ Melanie Krebs documents the history of different craft sectors in Central Asia since its conquest by Russia in the nineteenth century and discusses current projects of development cooperation in the field of crafts.⁶²

Haruka Kikuta analyses the social function and individual significance of venerating the patron saints of craftsmen (*pirs*). In a case study on a ceramics town in Uzbekistan, he traces how the practice transformed under the pressure of Soviet interventions in the handicrafts industry, its professional training system, and the post-Soviet re-Islamization wave, with its disdain for superstitions. Yet being deeply rooted in the master–apprentice relationship, he argues, *pir* veneration changed from a collective to an individual practice and partially declined but never ceased to exist.⁶³ Jeanine Dağyeli approaches the history of crafts in Central Asia by analyzing a spe-

59. Francesca Bray, “Only Connect,” 235.

60. Akbar Chakimov, *Atlas of Central Asian Artistic Crafts and Trades*; Thomas M. Skallerup, “Artisans Between Guilds and Cooperatives.”

61. Richard Tapper and Keith McLachlan, *Technology, Tradition and Survival*.

62. Melanie Krebs, *Zwischen Handwerkstradition und globalem Markt*.

63. Haruka Kikuta, “Venerating the Pir.”

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cific text genre: *risala-yi kasb* are missives which legitimize different crafts as divine interventions and at the same time constitute a moral code for performing them in a godly manner. As historical source, the *risala* allow for a detailed description of the social organization of different crafts, their respective *pir*, their prestige, and their embeddedness in the religious and economic environment, but reveal little about their technical aspects.⁶⁴

As the passing on of knowledge and practices has often been interrupted by political interventions, Dağyeli argues, the return to artisanal traditions, even though being promoted in post-Soviet states, often becomes a projection. In their article on the reassembling of apparel production in post-Soviet Kyrgyzstan, Aisalkyn Botoeva and Regine Spector paint a more optimistic picture of the significance of traditional crafts for professional “well-being” in present-day Central Asia. For scholars of technology, the study is particularly interesting as it highlights the ability of craft-based apparel producers to draw upon and creatively re-employ technical and managerial knowledge obtained in Soviet institutions.⁶⁵ By doing so they successfully operate their business in a niche market for unique, hand-crafted ethnic apparel. The authors make a convincing—albeit arguably limited—case that counters the common narrative of economic crisis and industrial decay in post-Soviet Central Asia. Their study about professional resilience and flexible adaptation might as well be translated into one about the hybridization and creolization of “modern” and “traditional” or “formal” and “informal” forms of technical knowledge.

The emerging research on do-it-yourself cultures, which includes some upcoming publications on the late Soviet Union and the post-Soviet world, holds the potential to open up fresh perspectives to challenge “commonly constructed oppositions between consumption and production, manual and intellectual labor, work and leisure time activities, invention and routine, high and popular design, and educated and everyday taste.”⁶⁶ Its specific historical trajectory makes the post-Soviet world, and in particular Central Asia, a rewarding case study on the borderlands between traditional crafts, industrial technology, and individual expertise.

64. Jeanine Dağyeli, “Gott liebt das Handwerk.”

65. Aisalkyn Botoeva and Regine Spector, “Sewing to Satisfaction.”

66. Quote from Zinaida Vasilyeva, “Do-It-Yourself Practices,” 28–29. The essay is an interim report on a (yet unpublished) dissertation on do-it-yourself practices and technical knowledge in late Soviet and Post-Soviet Russia that combines historical and anthropological approaches. The text promises substantial insights into the relationship between practical skills, daily routines, and ideology; on the mobilization of knowledge in different contexts, and the controversial meanings of «materiality» in Soviet and post-Soviet society. See also Jonas van der Straeten and Mariya Petrova, “Mud Bricks in a Concrete State.”

Keeping Things Running in Industrial Borderlands: Everyday Practices of Building, Working, and Moving in Central Asia

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The example of do-it-yourself practices furthermore calls into question the approach of writing the history of technology in Central Asia as a history of *technologies*. Such a history runs the risk of missing out on technology's more mundane but vital aspects and its significance for daily life. The historiography on housing in Central Asia is an illustrative example. The widespread fascination with prefabrication, Soviet urban planning, and Soviet architecture among Western scholars has generated a plethora of academic literature on Soviet mass housing, a phenomenon that has purportedly "shaped the culture and everyday life of nearly all Soviet citizens."⁶⁷ Yet when looking through these studies—some of them on Central Asian cities—it is difficult to avoid the impression that the selection of case studies and those elements of cities under investigation have been heavily influenced by preconceptions about the socialist city. Most studies offer sweeping narratives about the transformation of Islamic cities in Central Asia into socialist cities, signified by the destruction of the structures of the old Islamic city centers and their replacement by monumental Soviet architecture.⁶⁸

In this tradition, Paul Stronski's monograph on Tashkent traces the transformation of the ethnically diverse, primarily Muslim city into a prototype for a Soviet city in Central Asia.⁶⁹ What Stronski pictures as a far-reaching, yet messy and disorganized, process of building the Soviet city "was not the end goal in itself but the means to change the society it housed."⁷⁰ By integrating local ethnic traditions and socialist ideology into a novel form of urban space and architecture, planners turned Tashkent into a socialist propaganda showcase and its residents into stalwart supporters of the regime. His meticulously researched book draws a relatively clear boundary between the Soviet officials, planners, and architects who imagined, planned, and—to a large extent—created modern Tashkent on the one side, and the local residents who reacted to, resisted, and eventually acquiesced to the city's socialist transformation on the other.

What deserves further attention is the agency of local Central Asian populations themselves in shaping their cities, especially in smaller cities where the administrations lacked the funds to implement their ambitious master plans for socialist urban spaces. In their study of cultures of individual house building in Samarkand between 1960 and 1992, Jonas van der Straeten and Mariya Petrova show the paradoxes of Soviet housing policy. When faced with the massive shortage of living space after WWII, the city administration tolerated or even promoted individual house building. This

67. Philipp Meuser and Dimitrij Zadorin, *Towards a Typology of Soviet Mass Housing*.

68. Ernst Giese, "Transformation of Islamic Cities in Soviet Middle Asia."

69. Stronski, *Tashkent*.

70. *Ibid.*, 4.

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practice continued after 1962, when an official decree introduced stricter laws for private house building in cities. At the same time, the administration of Samarkand lacked effective control over the process. Chaotic planning and conflicts of competence, e.g. between the city administration and neighboring kolkhozes, opened up considerable scope for unauthorized house building, a practice that has left its traces in Samarkand's urban landscape.⁷¹ Such an observation reverberates with Kotkin's call for "shifting the focus from what the party and its program *prevented* to what they made *possible*, intentionally and unintentionally."⁷² While questions of everyday experience and resistance in the Soviet Union have received considerable attention in recent years, for example through the study of subcultures, their material dimension remains widely unexplored.⁷³

In view of a general scarcity of material and capital, Petrova and van der Straeten describe a widespread culture of improvisation. The successful construction of an owner's house was largely dependent on the possibility to apply technical skills from one's job or to mobilize skilled work through one's social networks, and on the ability to procure building material through formal and informal channels. The interpretation of this phenomenon by Soviet official was ambiguous. They either regarded the local population's tendency to be proverbially "close to the ground" as a main barrier in the way of socialist urban development, or they re-interpreted local practices in light of socialist propaganda. In another instance, an author lauds the translation of the "Gorky-method," an initiative whereby colleagues helped each other to construct their houses, into "hashar," the local traditional form of neighborhood help that has its origins in the collective maintenance of irrigation canals.⁷⁴

This example reminds us not to conflate the history of prefabrication and mass housing *technology* with the history of house building as a *practice* in Central Asia. Analogies can be drawn to other spheres of daily life, such as (industrial) work. Recently, the sweeping narrative of how the Kazakh proletariat was historically "forged" from the top has been complemented by ethnographies of industrial labor on the "margins of capitalism" in post-Soviet Central Asia. They include a book chapter by Eeva Kesküla on coal mining in Kazakhstan, a sector that today has become a "mining citadel" which offers relatively well-paid jobs for those who are inside, but

71. van der Straeten and Petrova, "Mud Bricks in a Concrete State."

72. Kotkin, *Magnetic Mountain*, 22.

73. Alexei Yurchak, *Everything Was Forever*.

74. van der Straeten and Petrova, "Mud Bricks in a Concrete State"; Regarding the origins of hashar, see Obertreis, *Imperial Desert Dreams*, 31. Overall, figures show that Samarkand was not an exception within Central Asia. In 1981, nearly thirty years after Khrushchev's regime had embarked upon a mass housing campaign, 40 percent of urban housing space in Uzbekistan was in private hands, in Kyrgyzstan 43 percent, in Tajikistan 32 percent, and in Kazakhstan 28 percent. Gregory D. Andrusz, *Housing and Urban Development in the USSR*, 290.

becomes increasingly inaccessible to newcomers.⁷⁵ Kesküla hence explores a “situation where precarious sons do not work alongside their securely employed fathers.”⁷⁶ Tommaso Trevisani, in his meticulously researched ethnography of a shop floor in Kazakhstan’s gigantic steel combine in Temirtau, traces the fragmentation of the industrial working class into skilled company workers and unskilled low-paid contract workers after the company’s takeover by the Indian ArcelorMittal in 1995.⁷⁷ Trevisani describes a phenomenon he calls *work-as-resistance* among the relatively better-off company workers. In a situation of permanent conflict with the international higher management, working hard to maintain the functionality of the workplace becomes a way to “assert their agency on the shop floor, despite the devaluation of their work.”⁷⁸

In a similar manner, the collapse of the USSR has led to a fragmentation, heterogenization, and partial informalization of urban transport. Within this constellation, the distinction between what is “old” and “new” can become difficult to make even for the same technology in different contexts of the same country, as the fate of Tajikistan’s two trolleybus systems illustrates. In the city of Khujand, the trolleybus system increasingly fell into disrepair in the 1990s. It was finally abandoned in 2014 and is now completely replaced by *marshrutkas*—imported, secondhand minibuses which are privately owned and operated.⁷⁹ At the same time, the capital city of Dushanbe saw a recent revival of the technology whereby even a new Russian-Tajik factory for local manufacturing of trolleybuses opened.⁸⁰ While in many cases, a history of state-managed infrastructures is likely to produce deficiency narratives for the post-Soviet period, a less biased perspective on how people move, commute, or work in the transport sector can show Central Asian cities as sites of fluidity, assemblage, and bottom-up initiative.

This holds true for a research project on marshrutka mobility in Central Asia that has produced a number of recent publications.⁸¹ Among them is a comparison of older and more recent ride-sharing (ride-sourcing) practices and informal transport as well as a critical analysis of the informal transport workers’ positions and livelihoods in Bishkek.⁸² In this research too, the imaginary of borderlands features prominently, here termed as “grey-zones where . . . the modernist, secular, urban, industrial

75. Payne, “The Forge of the Kazakh Proletariat?”; Kenneth M. Straus, *Factory and Community in Stalin’s Russia*; Eva Kesküla, “Miners and their Children.”

76. *Ibid.*, 63.

77. Tommaso Trevisani, “Work, Precarity, and Resistance.”

78. *Ibid.*, 88.

79. Sgibnev and Vozyanov, “Assemblages of Mobility.”

80. “Poslednie rogaye.”

81. “The Marshrutka Project.”

82. Lela Rekhviashvili and Wladimir Sgibnev, “Placing Transport Workers on the Agenda”; Rekhviashvili and Sgibnev, “Uber, Marshrutkas and Socially (Dis-)Embedded Mobilities.”

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heritage of the 'global North' converges with a 'global South' set of peripherality, authoritarianism and exploitation."⁸³

Unfortunately, these more grounded analyses of everyday material practices in Central Asia have been nearly exclusively a domain of anthropologists and geographers and are limited to the post-Soviet period. In their studies, historical accounts usually serve the purpose of contextualization. By looking at it through the eyes of their respondents, at times, researchers might be inclined to reproduce a widespread nostalgia for the Soviet past:

The Soviet shop floor was a crowded place of sociality. Some workers recall going to work as being like "going to a feast." The factory was "a second home" where the home/work separation was attenuated by the quality of relations and the camaraderie.⁸⁴

By using oral history approaches that are more reflective about the constructive aspect of personal memory and a wider set of archival material, historians might add more nuanced historical accounts of the everyday use of different technologies.⁸⁵

Whether in housing, industrial labor, or mobility, a key theme that cuts through the studies under review is the question of how different technologies are kept operational, often in adverse and changing social and natural environments. A history of the individual practice and social organization of repair, maintenance, and operation in Central Asia seems to be one of the promising directions for further research. The example of urban mobility in Central Asia illustrates the shift in perspective demanded by Edgerton. What needs explanation here, rather than the "modernization" of urban transport throughout history, is how different modes of ensuring urban mobility are technically maintained and socially organized. In other words, how are things kept running?

Sociologists Ekaterina Gerasimova and Sofya Tchouikina have described the Soviet society as a "repair society" (*Obshchestvo remonta*).⁸⁶ Permanent repair, they argue, was a key feature of daily life not only of the disadvantaged but of the majority of people. Driving and maintaining a car, for example, as Lewis Siegelbaum highlights, involved an immense degree of individual initiative and risk-taking behavior—to an extent that some Soviet officials feared the automobilism might undermine the collectivist state ideology.⁸⁷ In their study of the subjectivation processes associated with Soviet

83. Rekhviashvili and Sgibnev, "Placing Transport Workers on the Agenda," 1.

84. Trevisani, "Work, Precarity, and Resistance," 96.

85. See also Timur Dadabaev, "The Role and Place of Oral History in Central Asian Studies"; Julia Obertreis and Anke Stephan, *Erinnerungen nach der Wende*.

86. Ekaterina Gerasimova and Sofia Tchouikina, "The Repair Society."

87. Lewis Siegelbaum, *Cars for Comrades*, 243; see also Luminita Gatejel, *Warten, hoffen und endlich fahren*.

do-it-yourself culture, Alexey Golubev and Olga Smolyak turn this argument upside down. Based on the analysis of Soviet amateur journals, they argue that “power structures and discourses of late socialism pervaded through persuasion and care the Soviet social body to the degree that practices of making things at home became part of the Soviet symbolic order.”⁸⁸

The study of do-it-yourself practices, repair, and maintenance in Central Asia as one of the peripheral areas of the Soviet Union adds another, (ethno-)cultural, dimension to this debate. In the Tajik language, Wladimir Sgibnev argues, the Russian term *remont*—roughly translated as “repair”—assumed new layers of meaning: “*Remont* is not only about attending to shortcomings, not about mending something broken, but is a culturally embedded creative practice.”⁸⁹ Being nearly exclusively used for construction-related activities, “remont” is a key conception in practices of space production.⁹⁰ In a similar vein, Mateusz Laszczkowski has conducted ethnographic research on the maintenance of a courtyard (*dvor*) in a Soviet-era apartment block in Astana. His ANT-inspired study centers on the use of scraps and their material agency in the formation of locality. Scraps, he argues, embody the perception of disconnect between the local residents and the state.⁹¹ His argument resonates with similar works in other socialist contexts. In her research project on the afterlife of a gigantic social housing project by the GDR in Vinh City, Vietnam, anthropologist Christina Schwenkel closely studies how local residents appropriated, repurposed, and renovated the apartments and facilities according to their own spatial logics.⁹²

More historical research in this direction on Central Asia promises not only to provide fresh perspectives to an emerging scholarship on repair and maintenance, especially in the Global South.⁹³ It is also likely to produce an important complement to storylines about the ill-conceived and incomplete modernization of Central Asia under Soviet rule and of the corrosion of large, formerly state-owned enterprises and infrastructures during its post-Soviet period.⁹⁴ Central Asia lends itself particularly well to

88. Alexey Golubev and Olga Smolyak, “Making Selves Through Making Things.”

89. Wladimir Sgibnev, “Remont,” 55.

90. Sgibnev, “Remont.”

91. Mateusz Laszczkowski, “Scraps, Neighbors, and Committees.”

92. While the publication of a book is forthcoming, a recent journal article describes how the breakdown of the project’s “spectacular” infrastructure for water provision “catalyzed a collective ethos of maintenance and repair as the state shifted responsibility for upkeep to disenchanted tenants.” Christina Schwenkel, “Spectacular Infrastructure,” 520.

93. Steven J. Jackson, “Rethinking Repair”; Andrew L. Russell and Lee Vinsel, “After Innovation”; Stefan Krebs, Gabriele Schabacher, and Heike Weber, *Kulturen des Reparierens*; Stephen Graham and Nigel Thrift, “Out of Order”; Julie Y. Chu, “When Infrastructures Attack.”

94. See for example Melissa K. Chioyenda, “The Illumination of Marginality”; David Gullette and Jeanne La Féaux de Croix, “Mr Light”; Tobias Kraudzun, “Bottom-up and Top-down Dynamics.”

the study of the persistence of technology and its inherent temporality, not least of technical infrastructures, throughout periods of political and societal change.⁹⁵

Conclusion

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Widely considered one of the most peripheral world regions, Central Asia remains one of the least explored by historians of technology. At the same time, scholars from neighboring disciplines such as Soviet history, anthropology, or urban geography have opened fresh perspectives for research on technology and material culture in Central Asia. Their research hints to a wide array of potential case studies for historians. These case studies can help the history of technology, a discipline that was for long stuck in the mold of Western industrial technology, to question some of its major ontologies, as they transcend binaries of production and consumption, of formality and informality, of imported and local technologies. I have therefore argued in the essay that rather than starting with fixed concepts of geographies or technologies, engaging with the “borderlands” of industrial technology in Central Asia seems to be one of the most promising avenues for further historical research.

The four sections of this essay have delineated what exactly there is to gain from such an endeavor. It first provides a better understanding how technological practices and know-how circulated in a region that historically has been a transit zone between Europe, Russia, China, and the Middle East as well as a laboratory for the “Third World”; second, a more nuanced perspective on how large technological systems have not only been key for creating bounded spaces of modern statehood but also for disintegrating spaces; third, fresh insights into how industrial technology and crafts have converged and stimulated each other; and fourth, a fascinating picture of everyday practice that oscillates between formal and informal labor, industry and do-it-yourself. For historians of technology, there is much to gain from exploring the region’s archives and personal memories.⁹⁶

95. On the current debate on the temporality of technology, see Heike Weber, “Zeitschichten des Technischen.”

96. Compared to other world regions of the Global South, Central Asia offers a research environment that is largely favorable for the historical study of technology. An arguably positive legacy from the Soviet period is the comprehensive, systematically ordered, and well-maintained state archive system. Particularly in Kazakhstan and Kyrgyzstan, I have experienced these archives to be easily accessible for foreign researchers, and in Kazakhstan, the different archival collections are even listed in an online catalogue. Other countries in the region are more restrictive: Uzbekistan has considerably opened towards foreign researchers after the recent change of administration, but still requires them to formally apply through their respective embassies and also makes access to archives dependent on an approval by the foreign ministry. The same can be said of Tajikistan, where everyday contingencies further impede research work.

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For a recent update on Tajikistan, see the note on sources in Kalinovsky, *Laboratory of Socialist Development*, 257–61. Turkmenistan, arguably the most restrictive country of the region, is almost completely closed for foreign researchers.

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