



Toward an Environmental History of Tsarist Russia and the Soviet Union

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Nature is not a temple, but a workshop, and man's the workman in it.

—IVAN TURGENEV, *FATHERS AND SONS*

"Man is king of nature," Andrei prompted.

"Yes, yes, king. Just reign a bit and you'll be sorry."

—VALENTIN RASPUTIN, *FAREWELL TO MATYORA*

"Isn't nature incredible?"

"To me, nature is . . . I dunno, spiders and bugs. And big fish eating little fish. And plants eating plants and animals eating. . . . It's like an enormous restaurant. That's the way I see it."

—WOODY ALLEN, FROM THE FILM *LOVE AND DEATH*

It's their place, Mac, they have a right to make what they can of it. You can't eat scenery.

—VICTOR, A SOVIET FISHERMAN, FROM THE FILM *LOCAL HERO*

THE ESSAYS in this book explore the rich and remarkable environmental history of tsarist Russia and the Soviet Union over the last three hundred years. And, as is often the case in writing the history of Russia, I begin with the insights of literature. The tale of two dams, built about a century and a half apart, offers a window onto the evolving ways in which human political-social-cultural structures were intricately interwoven with ecological, hydrological, and geological systems. In his autobiographical *Family Chronicle*, the famous Slavophile S. T. Aksakov tells a triumphant story of his grandfather, the nobleman Stephan Mikhailovich Bagrov, who set up a family farmstead in Ufa province in the eighteenth century—ousting the previous pastoral Bashkir inhabitants from their land through “savvy” imperialist trickery. In Aksakov’s narrative

of imperial control, his grandfather was engaged in a great Russian triumph over the natural world and the unleashing of the land's agricultural treasures:

Dear Land! With Gifts beyond all measure
By Nature's kindly hand bestown—
henceforth thy plains' and pastures' treasure
Not for the herdsman bloom alone!

To make the fields bloom and fill the bellies of his family and the hundreds of Russian serfs whom he uprooted and brought with him, Bagrov built a water mill “to imprison the wildly-rushing stream in its appointed basin.” For this anthropogenic hydrological transformation, “four mighty oaken posts had been driven firmly into the clayey bed of the Buguruslan [river],” and then more than a hundred men, women, and children threw in bundles of sticks, wood, and straw weighted with stones, dung, clay, and sod. Much was carried away by the river, but more and more caught on the posts and on the detritus dumped in. The work was done feverishly, loudly, and with great excitement and anticipation. “It was no light task to restrain the impetuous stream,” according to Aksakov. “But victory was on the side of Man. No longer could the water escape through the stout barrier. The flood paused, as if in doubt; and filling the whole river gorge, rose over the banks, overflowed into the meadows, and by evening lay—a wide and shining lake—unconfined by bank or hedge, and dotted here and there by upstanding clumps of trees.”² Sometime after the mill was completed, Bagrov took his family to the new calm reservoir for an afternoon fishing party and to inspect the mill's operation with his daughter. As a man (and as a man who “was very expert in all branches of country industry”), Bagrov ruled not just the social and familial roost. He controlled and dictated the structures of nature. As paterfamilias, escorting his subservient daughter around the dam, he was also *pater naturalis mundi*.

More than 150 years later, the celebrated Village Prose author Valentin Rasputin published the evocative, haunting novel *Farewell to Matyora*.³ Rasputin offers a much more ambivalent view of damming (in his case of the Angara River in eastern Siberia) to create the massive Bratsk hydroelectric complex, which, at the time of its completion in 1967, was the largest such dam in the world. *Farewell to Matyora* is a fictionalized memoir based on Rasputin's own experiences growing up in a village on the Angara that was flooded, displacing him and his family. He explores the slow painful process of removing the people and preparing the ground for the gigantic industrial project. Journalists, poets, and Communist leaders—including no less than Fidel Castro—heralded the Bratsk dam as one of the great triumphs of Soviet socialism. They trumpeted the industrial development of Siberia that would power vast new industries with hydroelectricity, rebuild the USSR after the devastation of

World War II, and propel the people of communism to their utopian future.⁴

Yet the road to the future was paved with the lives and villages of those in the flood zone. Rasputin tells his story from the perspective of the few remaining villagers of Matyora—mostly very old women—who refuse to move from their island home in the middle of the Angara despite the impending rise in water. They lament the coming destruction of their village and the final rupture that the damming will trigger in the centuries-old seasonal lifeways of agricultural planting, care, and harvesting—of the definitive breach in the human-land relationship that had given form and meaning to their lives for generations. Their reluctance to embrace the dam was in some cases made worse by the fact that—in a version of what Mark Carey calls “disaster economics”—the authorities used the hydroelectric flooding to push not only technological and economic but also cultural and social modernization. Officials tried to move the villagers to ostensibly more modern, happier, and productive lives in rationally planned towns and to shift their ways of making a living from agricultural or hunting/fishing ventures to mechanical production or service activities.⁵

Rasputin uses the story of the hydroelectric drowning of the village of Matyora to speak to Soviet humanity’s place in larger planetary systems (especially the technologically based transformative projects of the Soviet system). He explores the tensions among large-scale engineering projects, the aspirations of human communities, and the lands and waters they inhabit. In particular, Rasputin challenges the belief, common in the Soviet Union and throughout the world at the time, that humans can and should control and reformulate the natural world so as to better humanity and nature itself. In one of many scenes of generational conflict, the grandmother berates her grandson:

“Why are you behaving like this? Does this land belong to you alone? We’re all here today and gone tomorrow. We’re all like migratory birds. This land belongs to everyone—those who were here before us and those who will come after. We’re only on it for a tiny time. . . . And we were given Matyora only to take care of. . . . To treat it well and be fed by it. And what have you done with it? Your elders entrusted you with it so that you would spend your life on it and pass it on to the younger ones. And they’ll come asking for it. . . .”

“Man is king of nature,” Andrei prompted.

“Yes, yes, king. Just reign a bit and you’ll be sorry.”⁶

Aksakov’s and Rasputin’s stories of dam building reflect certain continuities in the human relationship with the natural world in the past three hundred years. They underscore the profound, inextricable interconnections of human economy, gender relations, familial networks, imperial structures, power hierarchies, culture, and society with the physical environment and nonhuman

living world. They are reminders that human experiences of nature are localized and spatially bound: these are local stories, embedded in local events. Readers can hear the water flowing past and feel the soil under their boots and dirt under their fingernails. Yet, in both cases, the manipulation of rivers was directly tied to larger human and planetary processes: empire-building, forcible efforts to “modernize” existing lifeways, building communism, and technological transformations and electrification, among others. The stories of river control resulted from decisions made by leaders hundreds of kilometers away and the imposition of Russian power on ethno-religious communities across Europe and Asia. Both stories are saturated with Russian nationalism and imperial conquest. Yet, the indigenous peoples—Bashkirs and Buriats—remain silent and voiceless while the waters and lands around them are altered.

The two stories also highlight change over time. Aksakov’s dam built of wood, mud, and dung, designed to power a mill for grinding grain, is but a quaint forebear of the massive concrete Bratsk dam, with its churning turbines and surging electricity. The change in scale, scope, and technology was accompanied by an evolution in the human response to the dams—shifting from the unmitigated enthusiasm of Aksakov and his deeply held views of patriarchal progress to Rasputin’s much more critical understanding of the Bratsk dam’s impact on humans and the natural world. Although most Soviet observers held views even more triumphalist than those of Aksakov, by Rasputin’s time decades of “reigning” over nature had raised fundamental doubts about the wisdom of conquest for a growing group of concerned Soviet citizens.

If Aksakov and Rasputin provide two literary entrées into the fertile world of Russian environmental history, the essays in this volume offer an in-depth overview of the human-nature relationship in the tsarist/Soviet past and showcase the wave of field-changing research currently being written on tsarist/Soviet environmental history.⁷ Through a series of interconnected and reinforcing chapters, the international group of contributors ask us to rethink our understandings of tsarist/Soviet history by placing the human experience within the larger environmental context of flora, fauna, geology, and climate. A pressing contemporary crisis in Eurasia is the Soviet Union’s legacy of environmental degradation.⁸ Yet we are only beginning to understand how the peoples of the tsarist and Soviet empires viewed or utilized the “natural” world historically, or how the experience of recent pollution and physical manipulation fits into long-term patterns. By exploring the intersections among humans and the ecologies, landscapes, and waters of Imperial Russia and the Soviet Union, the authors in this book (1) contextualize the ecological traumas of the past two-plus centuries, (2) analyze the relationships found at the nexus of the region’s diverse peoples and environments, and (3) discuss the changing understandings of “nature” and the development of conservation efforts.

Geographically, the authors focus on the lands and waters of the former tsarist and Soviet empires, including the five former Soviet republics of Central Asia; the steppe lands of what are now Ukraine, southern Russia, and Kazakhstan; the Black Sea region; Siberia, the North Pacific, and the Russian Far East; and the Russian North and Arctic regions. They examine a wide range of natural phenomena and natural “resources:” from rocks, soil, and sand to fish and whales, trees and plants, rivers and waters, pathogens and disease vectors, ice, snow, and permafrost and from forests to steppe grasslands, deserts, oceans, and seas. Throughout, they place the history of Eurasia in a trans-chronological, comparative context, seamlessly linking the local and the global, rooting the chapters in the ecological and geological specificities of place and community while unveiling the cross-planetary patterns of human-nature relationships.

Although historians of Russia have for generations highlighted the importance of environment, climate, and geography to the patterns of Russian history, it is only in recent years that insights and aspirations of the field of environmental history have begun to influence broader understandings of Russian and Soviet scholarship.⁹ Environmental history has had precursors and “deep intellectual” roots (such as the *Annales* School), but it developed earliest and most fully in the historiography of the modern United States. From its roots in the 1970s, it has rapidly come to influence scholarship on other regions and eras of human and natural history, developing into a rich, self-conscious, diverse, and inclusive field.¹⁰ Scholars of environmental history explore the intersections of the biological, ecological, geological, hydrological, seismological, climatic, and astrophysical, with all areas of human life, uniting the material and the cultural. They recognize that humans are deeply embedded in the natural world, transformed by the natural systems in which they live, just as humans simultaneously alter the environment through everything from breathing, growing food, and expelling bodily waste to building nuclear power plants, driving cars, and releasing chemicals and plastics into the world’s waters.

Indeed, it is a foundational insight of environmental history that the human past is only rarely the history simply of humans. The human experience can only be understood when embedded in its larger contextual webs with other organisms; climate and weather; rocks, mountains, soil; water, lakes and rivers; and earthquakes and volcanoes.¹¹ This approach to the nexus of environmental and human history contrasts with earlier scholarly approaches that saw climate, geography, and environment as static (an unchanging stage on which humans acted) and also deterministic (at times crudely so).

The chapters in this volume reflect the inclusiveness and rich diversity of approaches found in the field of environmental history. They explore economic activities and productive capacities, from grain agriculture, nomadic pastoralism, hunting and fishing, forestry, and industry and industrialization. They

delve into the place of water in human life, including drought, floods, and the hopes and perils of water engineering projects (from irrigation to hydroelectric dams). The authors analyze the reinforcing interrelations of bodily health, disease, medicine, and environment; the cultural and religious understandings of nature; and the growth of scientific-technological knowledge and the expert role of physicians and engineers in environmental transformations. They also interrogate the history of disasters (“natural” and human); waste, pollution, and toxicity; conceptions and effects of climate change; behaviors of risk and resilience; human-animal relations; the built environment; and nature protection, preservation, and conservation.¹²

All the chapters are engaged with questions of the intersection of nature with human political power, geopolitics, and colonialism and the ways in which different political systems lead to differentiated environmental outcomes. They interrogate the work of Karl Wittfogel on the link between hydrology, irrigation, and autocratic/despotic systems; James Scott on modernity, technology, and interventionist states; and Donald Worster and others on the relationship of capitalism and the environment.¹³ The authors explore the marshaling of environmental knowledge to ensure more efficient or wealth-producing exploitation of natural resources as well as to facilitate conservation and protection efforts. In the process, they highlight the importance of “native” or “local” knowledge in the ever-evolving relationship of humans to the natural world.¹⁴ The authors engage with a variety of different methodologies, from actor-network-theory, the new materialist history, evolutionary history, and niche theory. They thoughtfully examine the ways in which the natural world possesses various forms of “agency” and influence in the ideas and actions of humans.¹⁵

In their articles the contributors to this volume both challenge us to reconsider some of the prevailing understandings of Russian/Soviet/Eurasian history and to make a contribution to the larger framework of global environmental history. In particular, several authors offer new temporal markers of tsarist/Soviet history, underscoring the continuities across time and political regime. Here the October or Stalin revolutions, for instance, serve less as moments of foundational change than as readjustments in larger patterns of human behavior in the Eurasian ecological context.¹⁶ The contributors also speak to the characteristics of the Soviet political system, underscoring how environmental factors ensured that improvisation and adaptation overshadowed plan and ideology as the favored ways to mitigate risk and to ensure socioeconomic resilience. Throughout their chapters, the authors are consciously and assertively comparative, tending to “de-exceptionalize” the tsarist/Soviet case. They find that the patterns and processes at the core of tsarist/Soviet environmental history match very closely other parts of the globe during these periods.¹⁷

THE IMPORTANCE OF RUSSIA/SOVIET UNION TO THE FIELD OF ENVIRONMENTAL HISTORY

The tendency of scholarship on the tsarist and especially Soviet environment has been to focus on “ecocide,” “prometheanism,” “gigantomania,” pollution, and the self-defeating destruction of nature as the primary—essentialist—characteristics of the human-nature relationship. What, then, can we learn from Russia, other than a cautionary tale? The answer is “a great deal”—and in seven areas in particular: (1) geographic, ecological, and cultural diversity; (2) the generation of environmentally derived, locally specific scientific knowledge; (3) explorations of the political-environmental relationship; (4) agriculture and food production; (5) the linkages of industrialization, technology, and environment; (6) the ecologies of empire-building; and (7) comparative discussions of the variety of conservation and preservation practices. To make these points is not to deny the wide-ranging and life-damaging environmental contamination unleashed by the tsarist and Soviet systems. As Stephen Brain has noted, “The historical record shows that the Soviet Union pursued simultaneously, from the outset, astonishingly progressive and cataclysmically destructive policies, and continued to do so until its fall in 1991.” Soviet citizens were exposed to unhealthy levels of pollution, radiation, and toxins through water, air, soil, food, and their built environments. There were multiple nuclear disasters, of which Chernobyl is only the most well-known. Industrial, agricultural, and domestic wastes were rarely disposed of in sustainable healthy ways, leaving behind a poisoned landscape, at times barely habitable. But, as the chapters here illuminate, there is more to the Eurasian environmental story than a focus on “ecocide” alone tells.¹⁸

The first point of importance is Eurasia’s geographic, climatic, and ecological heterogeneity. Stretching across as much as one-sixth of the world’s surface, the lands that made up the tsarist and Soviet empires offer exceptional laboratories for studying the many varieties of human-nature relationship. These territories include examples of a wide range of biomes: ice sheets and polar desert, tundra, the vast boreal forests of the taiga, temperate broadleaf forests, forest steppe, arid steppe, and semiarid to arid desert, to name the most prominent (see map 1.1). And within these biomes come five of the longest seventeen rivers in the world (and three of the top ten), as well as the planet’s oldest lake, the largest by volume of water and depth. This is not to forget the waters and coasts of the Baltic, Black, Caspian, Barents, and White Seas and the Arctic and Pacific Oceans, with their teeming life and their influence on both local and global weather. There are large swaths of permafrost, the mountains of the Caucasus, Urals, Altai, Verkhoyansk, and Yablonovyi ranges, and the magnificent volcanoes of Kamchatka. Throughout, the lands, waters, and airs of Eur-



MAP 1.1. Major Ecological Zones of Russian Eurasia.

asia offer habitat to some of the most diverse and fascinating flora and fauna on the planet, with hundreds of endemic species.¹⁹ This ecological multiplicity was (and is) matched by a human diversity in terms of religion, culture, language, lifeways, familial structures, economic practices, and social patterns. The ecological complexities and characteristics of Eurasia offered both opportunities and constraints for its myriad peoples.

Taken together, the sheer size and unparalleled diversity of environments of the former tsarist/Soviet empires—and especially the wide swaths of cold and frozen climates—offer new perspectives on global environmental history.²⁰ The unification of the massive Eurasian region within the tsarist and Soviet states created an integrated ecological-political-economic zone in which the demands of certain regions transformed the ecologies of others. Animals, plants, materials, and humans were extracted from one location and transported, traded, consumed, and then discarded in others. The desire for furs by tsars and elites led ultimately to the massive killing of sable and sea otters and to the extinction of Steller's Sea Cow. The demand for fossil fuels, various minerals (nickel, uranium, iron, manganese, asbestos, among so many others), and cash crops like cotton fundamentally remade local ecologies in such diverse locales as Noril'sk, Khanty-Mansiisk, the Urals, the Kola Peninsula, Central Asia, and the Arctic region.²¹ At the same time, the integration of these lands under tsarist/Soviet control allowed for the movement of peoples, commodities, flora and fauna, pathogens and disease vectors, and humans across large

landmasses and waters, binding Europe, Asia, and North America. Pathogens, in particular, found their way through the interconnected Eurasian landmass, from smallpox decimating native Siberians to cholera moving from South Asia through the Caspian Sea and the Volga and on to other parts of Europe (not to mention plague, HIV, and tuberculosis).²²

The second point of importance is that a dynamic, world-changing process of scientific discovery and technological enhancement was an outcome of this environmental diversity. Geographer David Livingstone persuasively argues that the specificities of place matter in the creation of science; that “issues of space—location, place, site, migration, region—are at the heart of scientific endeavor.”²³ Indeed, the essays in this volume underscore that we cannot fully understand the development of scientific, technological, and medical/health ideas and techniques outside of the local Eurasian environmental context in which humans produced them.²⁴ Pey-Yi Chu describes how the study of permafrost began in tsarist Russia, was institutionalized as a scientific discipline in the early Soviet period, and then spread from the Soviet Union to other parts of the Northern world. Important concepts of sustainability and perceptions of climate change also developed in the Russian and Soviet contexts, as Marc Elie highlights in his chapter. George Lywood shows the ways in which the specificities of Crimea’s local environment led physicians to develop a wide range of distinctive medical cures and therapies for those visiting health resorts. Moreover, David Moon’s chapter highlights the staying power of locally produced environmental ideas: how cultural understandings about forests grew in one ecological location and then were transported and applied as German and Russian settlers made their way into the steppe. Mieka Erley and Julia Lajus both underscore that Western ideas of soil, risk, and fishing were reformulated in consequential ways as they came into the tsarist environmental context and into Russian scientific and intellectual circles. In this way, the study of Eurasian environmental history reminds us of the importance of Russian and Soviet contributions to global science—contributions that were all too often ignored, downplayed, or summarily dismissed during the Cold War years. Certain scientists—such as I. P. Pavlov, D. I. Mendeleev, V. V. Dokuchaev, and V. I. Vernadsky, to take a small list—have become household names for their scientific discoveries, but many others remain obscure in the global scientific canon despite their tremendous influences on scientific research and conceptual understanding.²⁵

Third, the study of Eurasia from an environmental perspective allows us to consider more fully how different political-economic structures—whether monarchical, liberal democratic, theocratic, familial, authoritarian, socialist/communist, or capitalist—affect the human-nature nexus. Despite the dramatic shifts in political structures over the past three hundred years, the authors

in this book generally underscore the continuities and similarities in human-environmental relations across modern political and economic systems regardless of location or governing structure. Moreover, they offer important insight into the links between environmental consciousness and ecological movements on one hand and the development of an active public sphere, civil society, and professional networks of expertise on the other hand, as Julia Obertreis, Lajus, and Erley discuss.²⁶

Fourth, the tsarist and Soviet experiences expand our understandings of agroecological history, which has been at the foundation of the environmental history field since its inception. As well as providing essential calories to sustain life, the human-nature relationship embedded in agriculture has been at the core of state formation processes, power structures, and social hierarchy in the Holocene.²⁷ The story of tsarist/Soviet agriculture sheds light on the socioenvironmental changes associated with the (often forced) shift in land-use patterns and social systems from nomadic pastoralism to settled, grain agriculture, as Sarah Cameron, Ian Campbell, Elie, and Moon emphasize in this volume. Furthermore, Christian Teichmann and Obertreis speak to the ethno-hydrological complexities of irrigated agriculture in the twentieth century—a topic that has important resonance in irrigated lands from the American West to Australia and the Middle East.²⁸

In addition, the tsarist/Soviet cases are characterized by repeated episodes of famine that were often catastrophic for the people involved and served as turning points in their relationship with land, soil, and agricultural practice. These included the famines of 1891, civil war, collectivization, and the Virgin Lands experiments, to name but some of the most notorious. The study of tsarist and Soviet famines speaks to the question of causation—was it climate variations or human land use patterns (or some mutually influential combination) that led to insufficient yields and famines? Elie (this volume) explores this question in depth.²⁹ Moreover, agrarian reform in late imperial Russia and the Soviet Union was characterized by efforts to make agriculture more efficient and productive—to “modernize” food production so as to ensure sufficient amounts of food in the right places and at the right times to keep the population (especially the urban population) fed. Such motives informed the transition away from serfdom and bonded agriculture, the Stolypin reforms, and Soviet collectivization. Soviet approaches to agriculture became a model of human land usage for other modernizing communist states in the twentieth century—both to emulate and to avoid.³⁰ The tsarist/Soviet cases also speak to the history of silviculture and fishing, as highlighted in the articles here by Moon, Mark Sokolsky, Stephen Brain, Lajus, and Ryan Jones.

Fifth, the experience of Russia and the Soviet Union with industrialization offers a lens on the diverse ways in which the rapid socio-technological

changes of the “great transformation” affected different communities. Russia was not among the initial select group of northwestern European states to go through the great industrial technological shift to factory manufacturing and fossil-fuel energy sources. However, after playing catch-up, it quickly joined the ranks of these polities as one of the planet’s earliest adopters. In the twentieth century, the USSR became an alternative model of development to the capitalist West.³¹ How did culture and politics affect how humans experienced this shift ecologically? In what ways did innovative technologies, energy sources, engineering systems and ideologies, and structures of human-animal-technological ecologies transmute environments, climates, hydrologies, and geologies?³² As the articles by Andy Bruno, Chu, Teichmann, Obertreis, Sokolsky, Lajus, and Jones show, industrialization brought new understandings and uses of nature—from rocks and geology, to hydrological and irrigation systems, the ethno-technological transformation of fishing, and the heroism of the whale hunt. The embrace of industry, Bruno and Obertreis remind us, introduced unprecedented pollutants and toxins into the environment and into human and animal bodies.³³ Similarly, Lisa Walker illustrates the linkages among the spread of malaria, disease control efforts, and Soviet modernization efforts in Tajikistan. Moreover, the Eurasian region is important to understanding the global transformations of human energy production and use, from wood and dung to fossil fuels, nuclear power, and hydroelectric dams.³⁴

Sixth, the story of Eurasian environmental history also affects how we should understand the mutual relations of empire and environment—explored in all of the articles here. The environmental aspects of imperialism have been a tremendously rich vein of environmental history writing: from Alfred Crosby’s *Columbian Exchange* to William Cronon’s *Changes in the Land*, Richard Grove’s *Green Imperialism*, and J. R. McNeill’s *Mosquito Empires*, to name just a few. As one of the planet’s great imperial entities in the nineteenth and twentieth centuries, the tsarist/Soviet cases offers important insights into the nexus of empire and ecology—especially as an empire that was simultaneously contiguous and overseas and that controlled vast and diverse landscapes, waterscapes, and peoples. The movement of Russians across Siberia and the Pacific generated a mass slaughter of fur-bearing mammals and tremendous, rapid, and uncomfortably visible change to animal and fish species. This ecological cleansing led, in turn, to fundamentally new scientific and cultural understandings of the human-nature relationship—a theme explored here by Jones, Sokolsky, Lajus, and Brain. Moreover, in the Russian/Soviet case, the story of imperial and ecological expansion spotlights the multiple ways in which empires exacerbated the ecological vulnerability of the native peoples for the benefit of the metropolitan leaders—increasing their risk and reducing their resiliency. It also illuminates how colonial settlers brought with them a portmanteau of eco-

logical ideas and practices (as Moon, Campbell, Cameron, Teichmann, Oberreis, Sokolsky, Jones, Lajus, Brain, and Walker all make clear). The essays here make visible the linkages between empire-building and disease. For Walker, Soviet efforts to control Tajikistan were mediated through the Soviet encounter with malaria. Lywood, by contrast, illustrates how the colonized lands and waters of Crimea became a “coast of health” to cure metropolitan visitors. At the same time, the tsarist and Soviet states’ multi-confessional character permits comparison of the ways in which Christians, Muslims, Jews, Buddhists, Shamanists, and other spiritual communities understood and explained the human-nature relationship. Brain, for example, demonstrates how the practices and beliefs of the Pomor Christian faith affected (and were in part determined by) their approaches to fishing.

Finally, the tsarist/Soviet case is especially important to comparative environmental history because of its distinctive conservation and preservation practices. Russia’s *zapovednik* (nature preserve) structure developed in the tsarist era and then expanded rapidly and extensively in the Soviet years and has since been applied elsewhere in the world. In comparison to the multi-use national park system of the United States (usually held up as the archetype for nature protection globally), the *zapovednik* model represents a distinct Russian/Soviet contribution to global conservation efforts. These segregated, closed lands were to be used for both nature protection and scientific research: by separating out examples of a range of different ecologies, scientists could examine and understand the development of these natural communities absent human influence.³⁵ In addition to the celebrated *zapovedniki*, the authors here underscore that tsarist and Soviet ideas of conservation and preservation also developed from Christianity (Brain), geopolitical competition (Sokolsky and Jones), disappearing fish stocks (Lajus), imperial racism (Sokolsky), industrial development and pollution (Bruno and Oberreis), and tourism (Lywood).

THE IMPORTANCE OF ENVIRONMENTAL HISTORY TO RUSSIAN/SOVIET STUDIES

Through environmental history we are reminded that “human” history is inextricably linked to natural agents of change, both organic and inorganic. We explore the interrelationships of human and nonhuman worlds and discover that there is no meaningful division between humans and nature; that humanity and the nonhuman world exist in an ongoing web of mutual transformations and influences.³⁶ The insights of global environmental history have important lessons for Russian/Soviet historiography in four areas in particular: (1) historical causation, the relationship of structure and agency, and change over time; (2) chronology, timescales, and periodization; (3) space, place, and the relationship between local and global; and (4) the types and uses of sources

and methodologies. The field is also productively comparative across time and place, allowing historians to situate their stories in a global human context (as all the authors here do explicitly). Moreover, environmental history promotes new categories of analysis to explore existing historical questions. Indeed, environmental historical approaches offer fresh ways to approach long-standing core questions of Russian/Soviet history: for instance, political power and the governmental characteristics of tsarist autocracy and Soviet communism, the long-standing and thorny question of civil society and public sphere, the practices and meanings of law and policing, questions of imperial expansion and interethnic contact, and the parameters and restrictions of agricultural and industrial development.

Environmental history advances a new understanding of causation—affording nature an active role in the making of history, as Bruno does (this volume). These new approaches to structure and agency should challenge historians of Eurasia to rethink core questions of the field. For example, John McNeill's recent study of the role of malaria and yellow fever in the Atlantic world reminds us that understanding just who won in the imperialist struggles in the Caribbean—and why—is less directly connected with military and naval strategy than has traditionally been understood. Instead, the fate of the region was also sealed by the ways humans created and fostered, however unwittingly, new breeding grounds and homes for mosquitoes and therefore malaria and yellow fever, which differentially affected European settlers and soldiers. These disease vectors transformed the political facts and military engagements of the Caribbean just as surely as any military leader or political decision. In her chapter on malaria in Tajikistan, Walker echoes these approaches. Similarly, the field of environmental history has also underscored the ways in which human technological-behavioral changes in the recent past have produced all sorts of new environments. For example, while refrigeration made possible the movement of food across vast distances without spoilage, it also opened up brand new environments for cold-loving “novel foodborne pathogens,” especially *E. coli* O157 H7 and listeriosis, which have threatened human health. The environmental context in which humans exist is regularly changing—and, in no small measure, this is because of human action.³⁷

Environmental history requires scholars to explore chronology and time-scale from a different vantage point. “Big history” and deep climate history remind us that the modern moment, which so often consumes the attention of the majority of historians, is but one small (if consequential) blip in a much longer history of the *Homo sapiens* species and the earth. We must fully understand the patterns deep in the planet's history as we strive to understand what is new and what is old in the Holocene—and in the Anthropocene (the much discussed theory of a new geologic epoch defined by human transfor-

mations of the earth system) and the “great acceleration” (the rapid increase in human production and consumption after 1945, accompanied by massive population growth and environmental change).³⁸ At the same time, we are reminded that changes in the earth’s geological, climate, and biological systems (let alone the larger structures of the universe) often take centuries and millennia. The human timescale remains limited and all too often focused on singular moments of human life rather than on the broader patterns of geological or climate change. Scholars need to be able to weave back and forth between the *longue durée* of planetary life and the short, contained events of a human life span. While Soviet history remains the most popular era to study in Eurasian history, environmental historians remind us that the human experience—and the webs and linkages of human-nature relations—goes ever so much farther back in time.³⁹

In addition, environmental history helps historians to rethink periodization and to pinpoint the defining moments of human and planetary change. There are, for instance, many candidates for turning points in the history of the modern world—the French or American Revolutions, World War I, the Bolshevik Revolution and the rise of Communism globally, colonization and decolonization, among so many others. And yet, in environmental history we are asked to consider the role of other, nonpolitical events in defining the chronology of the Anthropocene: especially, the Neolithic shift to settled agriculture, the Little Ice Age, the industrial revolutions of the eighteenth and nineteenth centuries, and then more recently, the atomic detonation and the nuclear era and the “great acceleration.” Here, environmental historians underscore the importance of avoiding a fixed focus on grand political events as the primary markers of human change.⁴⁰

Eurasian history also benefits from the insights of environmental historians for what they tell us about the structures of place and space.⁴¹ Much history written in recent years has been told through the lens of states and nation-states and often restricted to the boundaries and borders of such imagined geographic delineations. The “area studies” model in American universities, which divides the world into geopolitical-cultural blocks of study, institutionally reinforces this tendency. Environmental history offers fresh understandings of spatial and geographic interrelationships—and of the meaning of place to human communities. For instance, historians of water often utilize a watershed approach to mapping events and relations—organizing space through hydrological linkages to encompass interconnected water and terrestrial systems. In the mid-nineteenth century, the famed one-armed explorer of the American West, John Wesley Powell, submitted an extensive report to the US Congress arguing unsuccessfully that the West needed to be divided administratively

around river systems and watersheds. He aspired to make one state out of all the lands and waters connected with the (say) Colorado or Columbia River and not simply drop straight lines through the dry western terrain. Politicians at the time ignored this catchment boundary-making approach, and the hydrological, political, and economic outcomes for the American West were dramatic. Indeed, the actual creation of political boundaries globally has generally ignored catchment connectivity in charting and dividing land and water. Rather than mapped as a connected space, bodies of water have been parceled out to different political administrations, thus creating geopolitical tensions around transboundary rivers.⁴²

Last but not least, in the field of environmental history the historian discovers innovative professional tools and different types of sources, theoretical models, and methodologies. The study of the human-environment nexus merges the methodologies and approaches of the sciences with those of history. Here, for instance, biological understandings of the human species (from epigenetics to microbiomes and evolutionary and co-evolutionary patterns), ecological systems of flora and fauna, knowledge of disease spread and infection patterns, geological and seismological research, and explorations of climate shifts, all offer new methodologies and categories of analysis for understanding the human past. The study of the human-environment relationship has underscored the ways in which humans, animals, and the natural environment help to coproduce each other, and the work on evolutionary history has been especially fruitful here. Humans are intricately and inextricably embedded in the larger web of environmental relations. As humans struggle to exert some modicum of control over their surroundings, so too do the species that exist in relationship with them. Moreover, our increasing understanding of microbiomes underscores how human bodies are in fact multispecies bodies—where “nature” is both within and a part of humans—and humans are shaped physically and emotionally every day by these interspecies interactions. In addition, new sources such as sediment varves, ice cores, pollen samples, tree rings, and genomic analysis of long-buried bodies and bones are equally as important to reconceptualizing the past.⁴³ Finally, in environmental history new methodologies are brought to historical study, especially active fieldwork, historian-nature interactions, and historian-scientist interdisciplinary projects. Here, historians supplement the essential work in archives and libraries with additional research *in situ*, getting their boots muddy and their skin sunburned in the places they study. They interact with the ecologists, geologists, seismologists, biologists, and other scientists who work in these areas (both past and present) and examine their environment of study through the eyes of the people who live(d) in it.⁴⁴

EURASIA AND CONTEMPORARY ENVIRONMENTAL CONCERNS

While this is a historical book, the collection speaks to a series of important contemporary strategic and climate issues. First, these case studies offer theoretical insight into the relationships among economic development, resource exploitation, and environmental degradation and management. Given the central importance of natural resources to the economic future of Russia and Central Asia and to their political clout on the world stage (such as Russia's wealth in and strategic use of oil and natural gas, and the importance of fossil fuels to Kazakhstan's economic growth), it is crucial to understand the historical patterns of environmental exploitation in Eurasia. In addition, the study of this region—covered as it is with tremendous amounts of forest and permafrost—is significant for our understandings of global climate change and the atmospheric balance of carbon dioxide and methane. Exploring the historical causes and outcomes of environmental pollution and toxicity helps us to determine the health threat to the population and the economic implications of cleanup today. Moreover, Russia has long had a presence in the Arctic regions, both via lands within the Arctic Circle and an Exclusive Economic Zone in the waters of the Arctic Ocean through the 1982 UN Law of the Sea. In the current “race for the Arctic,” set off by melting Arctic ice cover, Russia is playing a lead role (with Canada close behind).⁴⁵ In addition, many of the chapters in this collection deal with questions of water. Water resources and the deterioration of water supplies will likely represent one of the most contentious problems of the twenty-first century. If the predictions are at all accurate, Russia (with more than 20 percent of all the surface freshwater on the planet) will perform a pivotal role in the future of the world's water. As global fish stocks dwindle, understanding past patterns of Russian/Soviet fishing will be important to scholars, policy makers, environmentalists, and fishing workers alike.

Second, the geopolitical relations of the former Soviet republics, both with each other and with their other neighbors, are in many respects determined by environmental factors such as struggles over resource usage and pollution. Here, too, a thorough examination of the environmental history of the region is instructive, as the articles by Sokolsky and Jones clearly reveal. Tajikistan and Uzbekistan's competition over scarce water resources for hydroelectric power, agriculture, and drinking sources have been intensifying for several years. China's seemingly unquenchable thirst for Russian natural resources—from timber to water, minerals, furs, oil, and gas—lies at the heart of the current relationship between the two countries. And the potential riches from these resources have led to high levels of illegal resource extraction and the rise of organized crime groups working across the Russo-Chinese border. One fea-

ture of post-Soviet Russian-Ukrainian tensions and violence was energy supplies and energy delivery structures. And the growing exploitation of Arctic resources has embroiled Russia in diplomatic struggles with Canada, the United States, Denmark, and Norway, which are now playing their way through the legal structures of the United Nations.