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The ideals of rationality and development in the political economy of the late Soviet Union

Introduction

The official narrative of conquering nature persisted from the earliest years of the Soviet project, reflecting a strong desire to promote the ideals of technocracy and industrialization – even though the outcomes often fell short of these ambitions. Notable initiatives that showcased this agenda included the exploration of the Arctic, beginning in the early twentieth century, through to the building of cellulose-producing factories on Lake Baikal during the 1950s and 1960s, and the construction of hydropower facilities by Soviet engineers in Angola in the 1970s onward. Efforts to harness the economic capacities of nature in the name of industrialization contributed to the onset of the Anthropocene but also faced insurmountable obstacles. As some scholarship shows, nature resisted, undermining Soviet economic plans and diminishing the results of technological efforts. Over the course of the Soviet century, this occurred in regions such as the Arctic and Siberia, where harsh climates and inaccessible terrain posed persistent challenges, and in Africa due to unanticipated environmental damage caused by floods, to name just a few examples.[1] At the same time, nature – exploited as an economic resource during the Anthropocene – imposed a specific limit on human activity: it could be devastated, thereby posing critical threats to the extractive economy.

Recent scholarly works emphasize that it was through a better understanding of this axiom that the Soviet Union and other socialist countries sought to develop improved models of human-nature relations. Over the twentieth century, they sought to harmonize the relations between nature and their regimes in a holistic manner.[2] The Soviet industrial mindset was underpinned by less visible yet com-

1 Andy Bruno, *The Nature of Soviet Power: An Arctic Environmental History* (Cambridge: Cambridge University Press, 2016); Elena Kochetkova, David Damtar, Polina Slyusarchuk, and Julia Lajus, "Soviet Technological Aid and the Technopolitics of Hydropower in Africa during the Cold War," in *Transplanting Modernity*, ed. Jenny Leigh Smith and Thomas Robinson (Pittsburgh: University of Pittsburgh Press, 2023), 146–164, among others.

2 Andy Bruno and Viktor Pál. "Socialist Environmental Holism in the Soviet Arctic and the Plains of Hungary," *Ab Imperio* 2024, no.2, (2024): 119–146.

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plex forms of engagement with nature, which resulted in attempts to rationally organize human-nature relations. The notion of 'rationality' (*ratsional'nost'*) was frequently invoked both in the professional vocabulary of engineers and economists, and in the rhetoric of politicians, to denote a desire to structure life according to principles of rational planning and material logic. It was often paired with the concept of rationalization (*ratsionalizatsiia*), which emphasized the process of organizing social, economic, and industrial development according to technocratic principles. By the mid-century, rationality had become a dominant Soviet framework for interpreting human–nature relations, contributing to efforts to quantify environmental processes and rationalize the relationship between nature and society. Rationality implied a variety of ideas and processes, which would ostensibly enable economic growth and broader human control over natural processes and domestic use of material resources.[3] In this work, I discuss rationality as a framework for approaching natural resource use.

This chapter focuses on key transformations in the meaning of rationality as applied to the use of natural resources and notions of development in the political agenda and industrial production in the Soviet Union. The relations between the Soviet project and nature were laced with environmentalist strands, which, though initially fragile, became increasingly visible in the later decades of Soviet history. Although lacking a universally accepted definition, scientists, industrialists, and politicians frequently invoked the concept of rationality to articulate visions of economic and social development.[4] This chapter examines the meanings

3 Elena Kochetkova, *The Green Power of Socialism: Wood, Forest, and the Making of Soviet Industrially Embedded Ecology* (Cambridge, Mass.: The MIT Press, 2024); Roman Gilmintinov, "Socialist Valuation of Nature: Political Economy, Environmental Regulation, and Coal Mining in the Soviet Union" (PhD diss., Duke University, 2024).

4 See, among others, various approaches towards environmental history of Russia and the Soviet Union in Paul Josephson et al., eds., *An Environmental History of Russia* (Cambridge: Cambridge University Press, 2013); Laurent Coumel, "A Failed Environmental Turn? Khrushchev's Thaw and Nature Protection in Soviet Russia," *The Soviet and Post-Soviet Review* 40, no.2 (2013): 167–189; Jonathan Oldfield, Julia Lajus, Denis J. B. Shaw, "Conceptualizing and Utilizing the Natural Environment: Critical Reflections from Imperial and Soviet Russia," *Slavonic and East European Review* 93, no.1 (2015): 1–15; Nicholas Breyfogle, *Eurasian Environments: Nature and Ecology in Imperial Russian and Soviet History* (Pittsburgh: University of Pittsburg Press, 2018); Andy Bruno, "Climate History of Russia and the Soviet Union," *WIREs Climate Change* 9, no.5 (2018), e534; Evgeny Gololobov, "Antropogennoe vozdeistvie cheloveka na prirodu i ee okhrana na severe Zapadnoi Sibiri," *Tomsk State University. Journal of History* 61 (2019): 12–20; Julia Lajus, "Soviet Official Critiques of the Resource Scarcity Prediction by Limits to Growth Report: The Case of Evgenii Fedorov's Ecological Crisis Rhetoric," *European Review of History: Revue européenne d'histoire* 27, no.3 (2020): 321–341; Catherine Evtukhov, Julia Lajus, and David Moon, eds., *Thinking Russia's History Environmentally* (New York: Berghahn, 2023).

of rationality between ideas and actions to better understand its roles in changing attitudes towards natural resources in Soviet industry and the political language that described industrial development. My analysis is built upon professional publications in scientific journals, *Priroda* (Nature) and *Lesanaia promyshlennost'* (Forestry Industry), and published volumes and archival reports of industrial and research institutes, discussing rationality and natural resources. While offering insights into earlier decades, I am particularly interested in the period between the early 1950s and early 1980s, which were years of substantial transformation in both industrial technologies and industrial views on nature.

This chapter argues that, as it was applied to industrial development, rationality was a powerful discursive instrument that penetrated political and expert languages to characterize the Soviet approach to nature. Rationality was a more complex category than just reconciliation between nature and industry because it did not deny and even emphasized exploitative relations – as Soviet society, industry, and the state were to benefit from the industrial potential of nature in the name of development and technologically-led progress. Rationality, however, described an ideal balance envisioned by the Soviet regime, based on the rational coordination of production and natural resource use, which would not recklessly deplete nature. Even though this compromise was not always reflected in concrete practices or outcomes, it contributed to the foundation of professional and political mindsets of late state socialism in the Soviet Union. As much as nature continued to be viewed as a reservoir of materials for industrialization, emergent notions of efficiency and non-depleting growth came to be emphasized in its exploitation, comprising a range of approaches from no-waste production to the sourcing of alternative resources. This built on the idea that consumption of resources should be controlled and rational, even as it was not to be subjected to outright limitation. The explicit drive to exploit nature was increasingly accompanied by emerging concerns for sustainability as a reaction to the unconventional route through which the Soviet state aimed for economic progress. Rationality that thus set limits on *wasteful consumption* while not denying – and even facilitating – an agenda of growth and development, provided both justifications and instruments for a *soft dominance* over nature. This line coexisted in the political language and industrial development with real Soviet practices that caused pollution and environmental degradation.

Politicizing rationality

The roots of rationality extend far beyond its Soviet-era usage, reaching back to antiquity. Yet, it was in the seventeenth century that metaphysical and scientific

notions of rationality were profoundly transformed, placing *ratio* at the center of emerging conceptions of objective knowledge and power. Over the following centuries, rationality evolved into a plurality of forms, ranging from the linguistic and ideological to the economic, political, and cultural domains.

In Soviet Russia, the Bolshevik Revolution of 1917 brought rationality to the heart of political governance, deployed to craft a controlled, calculated, and comprehensive mechanism for labor operations, continuous industrial production, and numerous other practices of economic and social life. The concept's wide usage was thus not necessarily connected to the exploitation of nature and economic production. In the 1920s, for example, the subject of the rationalization of the Russian language was a popular point of discussion in post-revolutionary academic and political circles, along with efforts to adopt Taylorism and Fordism, both regarded as leading Western industrial models.[5] Rationality was at the core of the rationalization and invention movement, which aimed to stimulate factory workers and engineers to engage in creative activities and develop ideas that could improve production and save costs.[6] Rationality was also widely applied to discussions around the secularization of the Soviet citizen and church-state relations. As in Britain and other European countries, the Soviet concept of rationality was actively promoted in the 1920s and 1930s to support the rise of applied science and technical progress as tools for socialist construction.[7] It was also used by Soviet scientists to emphasize the dominance of ratio in building a new world, to reshape every element of social organization and its supplements, such as nutrition and physical activities.[8]

The notion of rationality as it came to be employed regarding the use of natural resources in Russia is also rooted in the pre-1917 period and further devel-

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5 See on some early Soviet developments and experiments in Nikolai Krementsov, "Big Revolution, Little Revolution: Science and Politics in Bolshevik Russia," *Social Research: An International Quarterly* 73, no.4 (2006): 1173–1204; Michael David-Fox, *Revolution of the Mind: Higher Learning among the Bolsheviks, 1918–1929* (Ithaca: Cornell University Press, 2016); David Greenstein, "Assembling Fordizm: The Production of Automobiles, Americans, and Bolsheviks in Detroit and Early Soviet Russia," *Comparative Studies in Society and History* 56, no.2 (2014): 259–289; Sebastien Moret, "From Technicians to Classics: On the Rationalization of the Russian Language in the USSR (1917–1953)," *Russ Linguist* 34 (2010): 173–186, and others.

6 Elena Kochetkova, "Performing Inventiveness: Industrial and Technical Creativity in the USSR, 1950s–1980s," *The Soviet and Post-Soviet Review 49, no.*3 (2022): 249–273.

7 Robert Bad, *Applied Science: Knowledge, Modernity, and Britain's Public Realm* (Cambridge: Cambridge University Press, 2024).

8 Here I refer to the cases when the political power aimed to regulate physical activities of workers. See, for example, David Hoffmann, *Bodies of Knowledge: Physical Culture and the New Soviet Man* (London: Routledge, 2002).

oped during the first decades of the Soviet project. In 1915, the Commission for the Study of the Natural Productive Forces (KEPS) was established as an economic reaction to the demands of the First World War. The Commission's purpose was to scientifically investigate "the natural productive forces," which included natural resources. It found new relevance in a transformed form with the onset of the Soviet era as it came to focus on the integrated use of natural resources, long-term planning, reforestation, and other measures seen as important for preventing the depletion of nature.[9] The word was further employed in the period of rapid industrialization during the 1920s and 1930s, to suggest how the new political and social order would deal with the materiality of the natural world.[10]

Despite the many destructive aspects of Soviet industrialization and technological modernization, the appeal to rationality reflected a strong commitment to technological and economic development aimed at maximizing efficiency. Nature was supposed to facilitate industrial and social successes, and a major political line reiterated that nature was to provide society with material resources and fuel for development. Many specialists, however, stressed that resources should be used with minimal waste loss because of economic rationale, and insisted on the integrated use of natural resources through which every single waste item would be turned into reusable material. These views circulated in industry, even though they often did not translate into widespread action in Soviet industrial development. As early as the 1930s, legislation used rationality, such as central decrees which reorganized a special committee on the development and protection of natural resources of the Russian Republic. It declared the rational use and even augmentation of natural wealth (*umnozhenie prirodnykh bogatstv*) as the prioritized approach in the industrial dealing with nature. For example, in 1930, the All-Russian Central Executive Committee and the Council of People's Commissars of the Russian Socialist Republic issued the resolution "On the Protection and Development of the Natural Resources of the RSFSR". A year later, the Central Committee of the Party and the Council of People's Commissars of the USSR issued a decree titled "On Measures to Improve Forest Protection and the Organization of Reforestation Efforts," which emphasized the need to increase the amount of forest resources.[11] This drive for maximizing the use of nature was not unique, and was

9 "Problemy ispol'zovaniia prirodnykh resursov" [Problems of the Use of Natural Resources], *Priroda*, no.9 (1967): 115.

10 See Laurent Coumel, ""The Green Power of Socialism," Review," *The Russian Review* 83, no.3 (2024): 479–480.

11 *Ob okhrane i razvitii prirodnykh bogatstv RSFSR*, 1930 [On the Protection and Development of the Natural Resources of the RSFSR], accessed 10 July 2025, https://docs.historyrussia.org/ru/nodes/389088-ob-ohrane-i-razvitii-prirodnyh-bogatstv-rsfsr-post-vtsik-i-snk-ot-20-iyunya-1930-g.

also evident in other countries, such as the efforts seen in the United States during the 1920s to industrialize agriculture.[12] Rationality was also adopted in other capitalist economies to entail the acquisition of more efficient equipment, planning, and the distribution of resources.[13] Yet, the Soviet project typically explained rationality as a natural feature of state socialism and denied its broader use.

In the late 1930s, there was a continued political push for industrial development, which led to the establishment of several industrial sites. For example, large cellulose manufacturers were established in the north of Russia to satisfy the demand for pulp and cellulose needed for military and civilian production. By the 1950s, the concept of rationality in the use of material resources had already formed part and parcel of official political language justifying industrial enlargement. The rational use of natural resources arose during a period of intensive exploitation of resources in the Soviet political context and came to be incorporated into the highest level of political documents. Thus, the new program of the Communist Party, endorsed at the 22nd Party Congress in 1961, invoked the concept of rationality dozens of times to frame a wide range of issues – from the selection of sites for industrial construction to broader questions of economic development. It was also used to emphasize the forms through which resources extracted from nature would be used. The political declaration around the new round of exploitation of natural resources in Eastern Siberia and the Far East – forests, oil, and gas in particular – placed rationality at the core. Political rhetoric exploited rationality as a principle that could help reconcile the drive towards modernization with both the possibilities and limits of nature. Recognizing that natural resources were exhaustible, official documents emphasized the need to find a better balance between resource protection and exploitation. As the program of the Party stated, "Significant attention will be paid to the protection and the rational use of forest, water, and other natural resources," implying that nature would serve an important mission for future economic development.[14] The Khrushchev administration's political line emphasized modernization, further mechanization of industrial operations for natural resource excavation and processing, and economic growth as the core of the political agenda.

The increasing politicization of rationality in the use of natural resources resulted from escalating concerns about natural resources at a time filled with expectations of growth and technological progress. The real growth of the Soviet

12 Deborah Fitzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture* (Yale: Yale University Press, 2010), 11.

13 Lennart Schön, *An Economic History of Modern Sweden*, (New York: Routledge, 2012), 8.

14 *Programma KPSS*, 1961 [The Program of CPSU, 1961], accessed July 9, 2025, https://leftinmsu.narod.ru/polit_files/books/III_program_KPSS_files/066.htm.

economy in the 1950s, along with substantial technological achievements in space engineering, chemistry, ongoing industrial construction, and general technological enthusiasm, led many to believe in the notion of continuous progress.[15] The well-known Soviet formula of communism, as explained in the 1961 Program of the Communist Party, implied the integration of progress, science, production, and rationality. According to the official narrative, these elements would bring Soviet society to a state of ubiquitous prosperity and satisfy people's needs at levels exceeding developed capitalist countries.[16] This political interpretation of communism employed numerous Soviet ideological clichés, appealing to the promise of modern development in which science and technology were to further advance economic and social life.

Beyond the Party Program, however, the language of Soviet regime absorbed rhetoric about the rational use of material resources as a crucial principle to build the economy of the new society. As one commentator put it, "now, when the Soviet people are successfully building communism – the bright future of the whole humankind – the rational and careful use of natural resources that make up the most important basis of the productive forces of the country is our primary all-nation task."[17] Saving nature and ensuring environmental protection were declared important conditions for the ends of social well-being, which were more frequently put at the core of the Soviet interpretation of socio-economic development. Economization and rationality were to provide more abundant materials for consumer production because "the preservation and rational, careful use of natural resources is the essential economic and social problem of all the countries of the world. *Nature protection* serves to increase material riches, *to increase the prosperity* [italics are mine, E.K.] of the nations, the improvement of people's health, [and] the satisfaction of their cultural and aesthetic needs."[18] Over time, this concept expanded to encompass a range of priorities, such as access to consumer products and health-related services, that when combined would lead to higher living standards and deliver Soviet society to the communist stage of development.

15 See more on Soviet economic development in Philip Hanson, *The Rise and Fall of the Soviet Economy: An Economic History of the USSR from 1945* (New York: Routledge, 2003); Ekaterina *Zhuravskaya, Sergei Guriev and Andrei Markevich*, "New Russian Economic History," *Journal of Economic Literature* 62, no.1 (2024): 47–114.

16 *Programma KPSS*, 1961.

17 "Sokhranim i umnozhim bogatstva rodnoi zemli" [Let's Preserve and Multiply the Riches of Our Native Land], *Priroda*, no.12 (1960): 4.

18 A.G. Bannikov, "Luidi dolzhny berech' i liubit' prirodu" [People Must Protect and Love Nature] *Priroda*, no.12 (1960): 26.

The later decades brought about a more environmentalist approach to rationality in Soviet economic policies and prevailing beliefs in progress, even amid economic slowdown. If not used synonymously, rationality was evoked as a prerequisite for nature conservation, even though it was often used formally rather than as a driver of real policy change. Legislation from the 1960s onward developed aspects of the protection of separate natural objects, which at times appear explicitly environmentalist, and emphasized rationality as a crucial measure to avoid the wastage of natural resources. For example, between 1957 and 1963, the Supreme Councils of all national republics of the Soviet Union approved laws on nature protection, including the rational use of water resources.[19] The year 1968 further saw a series of laws issued by the Central Committee of the Party and the Council of Ministers of the USSR on the elimination of contamination in the Caspian Sea and the introduction of "measures on preservation and the rational use of natural resources of Lake Baikal." In 1972, the government issued further laws on "measures for the elimination of contamination of the basins of rivers Volga and Ural by non-refined waste waters," "measures on further nature protection and the rational use of natural resources," and policies aimed at "the increase of nature protection and the improvement of the use of natural resources" – in addition to regional legal acts aimed to protect smaller rivers and lakes, along with their bioresources. In the early 1970s, planning for economic development included political attempts to decrease the consumption of fresh water by industrial enterprises and improve the cleaning of waste, all embedded in the discourse of rationality.[20]

Late Soviet legislation emphasized rationality as "a measure of improvement" for the use of natural resources.[21] This type of improvement, however, was distinct from the notorious Soviet projects of transforming nature, even though its fundamental drive remained economic. Improving the use of nature by means of rationality manifested in ideas around the protection of nature as a source of riches, in which the rational use and conservation of nature co-existed. This form of improvement emphasized it has no sense behavioral shifts. For example, human behavior, which had to be guided towards rationality and, overall, inte-

19 I. Shishkin, "Energiia termal'nykh vod" [Energy of Thermal Waters], *Priroda*, no.5 (1969): 103.
20 Plan meropriiatii po sokrashcheniiu raskhoda svezhei vody, uluchsheniiu ochistki promstokov i sokrashcheniiu sbrosa zagriaznenii v vodoemy Liaskel'skogo TsBK na 1976 god [Plan of Measures for Reducing Fresh Water Consumption, Improving Industrial Wastewater Treatment, and Reducing Pollutant Discharge into the Liaskelskii TsBK Reservoir for the Year 1976], The National Archive of the Republic of Karelia. F. R-3091. Op. 1. D. 925. L. 10.
21 Here I refer to James Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed* (Yale: Yale University Press, 1999).

grated into more balanced relations with nature. Such practices were intended to avoid the depletion of nature, even as it continued to be exploited in ways that would enable the most efficient exploitation of resources.

The explanation of rationality was not solely associated with economic goals behind increasing consumption, but also appealed to long-term social dynamics. Typically for the late Soviet regime, this referred to morality as a debt and responsibility of the Soviet people. The political narratives of late Soviet legislation focused on future generations who depended on present-day politics. This demand explained that "the necessity for transmitting the environment in a better condition to the future generations derives from the essence of the very communist formation." [22] The political language appealed to rationality, or more correctly, the lack of rationality explaining the economic loss accrued from illegal practices, such as smuggling, illegal fisheries, and the hidden release of unprocessed waste from enterprises. The propaganda against smugglers denoted illegal behavior as irrational, and the state additionally designed other instruments, such as the Committee of People's Control, which monitored illegal acts of behavior by both producers and consumers.[23] Already present in early Soviet discourse, rationality continued from the mid-1960s onward to remain – and even intensify – as a firmly established and widespread element. Rationality developed as a crucial tool for increasing the efficiency of nature – not by directly destroying it, but by harnessing its greatest economic potential.

Rationality as economizing the production

Economizing was a central element of rationality and an inherent component of the late Soviet political economy, being a term heavily used during the final decades of the regime. While evident in the earlier period, it became especially

22 G.S. Gudozhnik, *Nauchno-tekhnicheskaia revoluitsiia i ekologicheskii krizis* [Scientific and Technical Revolution and Ecological Crisis] (Moskva: Mezhdunarodnye otnosheniia, 1975), accessed July 9, 2024, http://ecologylib.ru/books/item/f00/s00/z0000013/st007.shtml

23 Viktor Chernyi, *Narodnyi kontrol' na predpriiatiiakh neftegazovogo kompleksa Zapadnoi Sibiri v 1971–1980 gg.: Opyt kriticheskogo analiza partiinogo i gosudarstvennogo rukovodstva* [People's Control at Enterprises of the Oil and Gas Complex of Western Siberia in 1971–1980: Experience of Critical Analysis of Party and State Leadership] (PhD diss., Tomsk State University, 2002); Valentina Roxo, "'You Ought to Love Nature!' People's Control Committees – Environmental Whistleblowers and Western Siberia Oil in the 1970s," in *Thinking Russia's History Environmentally*, Catherine Evtukhov, Julia Lajus, and David Moon, eds., (New York: Routledge, 2023), 224–249; Elena Kochetkova, "People's Control and the Morality Quest of the Late Soviet Economy," *Journal of Social History*, (2025).

prominent in late Soviet discourse and was often combined with rationality. Economizing came to refer to the rationalization of decision-making around resource use, emphasizing the importance of economic calculation. Economizing supplanted the view of nature as a potentially endless source of abundant resources. It defined the need for a thorough calculation of costs and the advancement of technological possibilities with the goal of promoting future economic growth. In Jurgen Habermas' terminology, it denoted the "scientization of politics," which signifies the rationalization of political decision making.[24] In the Soviet Union, political and economic decisions were strongly shaped by technocratic influence. In Soviet discourse, rationality did not simply mean planning, but *rationalized* planning underpinned by cost and effect calculations that were supported by professional expertise.

Scientists and engineers were active participants in Soviet industrial development, exploring and explaining the possibilities of nature. Some commentators claimed that Soviet scientists were always concerned with the growth of productive forces, based on the principle of the rational use of natural riches. They stressed that the expeditions and research of the Academy of Sciences, for example, had a major "economic effect" on the country by offering better knowledge about coal and metallurgic spots, water basins and other resources – especially in the economic regions of great political interest, such as Siberia and the Far East.[25] At the same time, knowing more about nature, they explained, made it clear that natural resources were limited, and this reality created obstacles for large-scale economic goals.

Another dimension of economizing was the ongoing criticism of widespread Soviet industrial practices of overexploitation of techniques and equipment; instead of repairing and modernizing, critics decried, workers used the mechanisms at "their ultimate capacity." This happened because many enterprises exploited old equipment and lacked the means for technological modernization. At the same time, conversely, others pointed out that in some cases, machinery was underexploited. In some instances, for example, new equipment was kept in storage rather than installed in production chains. The use of natural resources was increasingly framed in similar terms, with critics leveling the charge that Soviet industry was either overusing or underusing resources, depending on the sector. Both were to be economized to balance the use of nature for economic purposes.

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24 Robyn Eckersley, "Habermas and Green Political Thought: Two Roads Diverging," *Theory and Society* 19, no.6 (1990): 739–776. See also Jon Mulberg, "Economics as the Scientization of Politics," *Journal of Philosophical Economics* 14, no.1–2 (2021), 227–238.

25 *Priroda i obshchestvo: Geograficheskii sbornik* [Nature and Society: Geographic Collection] (Saratov: Privolzhskoe knizhnoe izdatel'stvo, 1968).

Unlike what was seen as the Western tendency toward wastefulness – often criticized as an inherent feature of capitalism – the Soviet economy was not described as inherently wasteful, but rather as merely lacking rationality. In other words, this paradigm implied that the Soviet society had high rational potential for the most efficient and economical organization but had not properly employed it *yet*. For this reason, forest workers left large quantities of wood unused after logging operations, for instance, while employees of grocery stores allowed spoiled goods to be sold and failed to monitor the quality of food properly.[26] The lack of proactive rationality led to material loss and waste, and an emphasis on economizing thus emerged as an equally important principle of the planned economy. This emphasis emerged after a long history of Soviet ideological explanations for the economic process, dating back to the 1930s. As one early Soviet commentator put it, the society "suffers from the loss due to the insufficient technical base and production conditions, poor organization of the production, and … the low level of utilization of our huge economic potential." [27] The underlying reason hid in the aims that consecutive regimes set: socialism was inherently aimed at "the achieving of prosperity in the country."[28] In other words, productivity was inevitable and fully inherent to the Soviet society, but it needed to be stimulated and encouraged.[29]

The increased value placed on the rational use of natural resources in order to economize production was part of the bigger context of the late Soviet "scientization of politics." One of the manifestations of this trend was the adoption of mathematical methods in the economy, as part of automated systems of control and production.[30] The label of irrational was understood to denote, *a priori*, the sinister and degraded, while rationality and control were seen to lead to progressive development.[31] Rationality, however, was not to be understood as a means for appeasing economic desires and dreams about strong industry in the planned economy; it found ways to satisfy (sometimes enormous) appetites while not de-

26 Kochetkova, *The Green Power of Socialism*.

27 Iosif Burdiansky, *Osnovy ratsionalizatsii proizvodstva* [Fundamentals of Production Rationalization] (Moskva, Leningrad: OGIZ, 1934), 32.

28 F.N. Petrov, "Dlia blaga cheloveka" [For the Benefit of Man], *Priroda*, no.12 (1961): 5.

29 D.G. Zuliaev, *Upravlenie ratsionalizatorskoi deiatel'nost'iu na promyshlennom predpriiatii* [Management of Rationalization Activities at an Industrial Enterprise] (Izhevsk: Izd-vo "Shelest," 2022).

30 See, for example, Sergei Prokhorov, "Computers in Russia: Science, Education, and Industry," *IEEE Annals of the History of Computing* 21, no.3 (1999): 4–15.

31 Ekonomist Elena Veduta ob otechestvennoi modeli tsifrovoi ekonomiki [Economist Elena Veduta on the Domestic Model of the Digital Economy], Nomad, 2018, accessed 9 July, 2025, https://nomad.su/?a=15-201808270015.

stroying nature in recognition of her economic service. In any case, rationality meant active intervention in human-nature relations in order to account for both social benefits and the improvement of the material possibilities of nature. As a 1968 article in *Priroda* put it, "In order to actively interfere in the development of nature and to use her resources rationally as well as to achieve 'enrichment' [*obogashcheniia*] of her resources, it is necessary to penetrate into the essence of most sophisticated connections."[32]

The Soviet interpretation of future development, embedded in the terms of communism at the time, included the reconciliation of nature and production. Yet they both were to work in the name of a joint aim: economic growth. Economist N. Gladkov in the 1960s pointed to a widely circulated view that nature protection was in contradiction with the realities of using natural resources. Not challenging economic growth as a desired development as such, he nevertheless emphasized that "the use of natural resources [*prirodopol'zovanie*] is a deep and often ambiguous notion which implies not only the economically effective involvement of territorial complexes of the geographical environment in the process of production, but [its] protection and, in a number of cases, the restoration and transformation [*preobrazovanie*]."[33] Many engineers involved in production dependent on natural resources, such as the forestry industry, shared the belief that future economic growth would create demands for more natural resources. This view was also shared by some economists, planners, and scientists who had always had a stake in progress, a firm category of the Soviet vision of development, understood as the primary goal for the future. Thus, in 1968, the economic geographer Aleksey Minz began his book by stating that "the volume of natural resources which are involved in economic use is steadily growing."[34] Enthusiasm for future economic growth was also instigated by experiments with new synthetic materials, such as wood plastics, which facilitated the production of new consumer goods while also demanding hugely increased quantities of material resources.

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32 K. Otorbaev, S. Umyrzukov, "Vysoko v gorakh" [High in the Mountains], *Priroda*, no.12 (1968): 80.

33 Konstantin Pashkov, *Okhrana prirody v Baikal'skom regione: Problemy organizatsii i osnovnye napravleniia deiatel'nosti (1917–1991)* [Protection of Nature in the Baikal Region: Problems of Organization and Main Directions of Activity (1917–1991)] (PhD diss., Baikal'skii gosudarstvennyi universitet ekonomiki i prava, 2012).

34 Aleksey Minz, "Geograficheskie voprosy khoziaistvennogo ispol'zovaniia prirodnykh resursov SSSR" [Geographical Issues of Economic Use of Natural Resources of the USSR], *Voprosy geografii* 75 (1968): 19–37.

This was well reflected in other science publications such as a 1968 volume titled *Nature and Society* that discussed the rational use of natural resources and presented conclusions of a scientific conference. Combining science and rhetoric, the volume emphasized that nature must be protected. The rational use of natural resources meant that the Soviet citizen was to act as a planner who stood above industry and nature to devise better modes for organizing economic production.[35] The scientific foundation for building communism was conventional, and the rational use of natural resources emerged as an alternative to the electrification phase of the early Soviet decades and the chemicalization phase of the post-war period. Both phases were considered technological means towards achieving communism.[36] As one commentator put it, achieving communism was only possible by using the country's natural resources. Therefore, they continued, "We will increasingly consume natural riches, but at the same time, we will have to eliminate the wasteful use of natural resources."[37] They connected this issue not only to the economic meaning, but also explained that it had huge social importance, and rationality in the use of natural resources was only possible on "the scientific basis." This technocratic perspective was part of a broader explanation for economic and social mechanisms that described communism as a pathway to material abundance and prosperity.

Over the course of the last decades of state socialism, the rhetoric about communism and the interpretation of its stages, such as developed socialism (*razvitoi sotsializm*), were increasingly formalized. The rational use of natural and material resources in general also held a consistent place in this ideological context. Balancing ideological narratives, courses of action, and professional explanations, rationality thus served as a stable political and ideological pillar in understanding natural resources and their use in late state socialism within the Soviet Union.

Economizing implied finding an approach to nature that would not cross the threshold beyond which lay the complete depletion of the natural environment. Rationality insisted on the importance of calculating the "non-depleting potential" of the natural object and establishing "red lines" to identify the limits of potentially unlimited exploitation. Discussing thermal waters, for example, one article stated in 1969:

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35 *Priroda i obshchestvo.*

36 Here I mean "communism is the power of the Soviets plus electrification of the whole country" and "communism is the power of the Soviets plus chemicalization" as two slogans used in the Soviet Russia/Union over the Soviets decades.

37 "Nauka v novoi piatiletke" [Science in the New Five-Year Plan], *Priroda*, no.5 (1971): 3.

> We will discuss the most important issue now, namely the rational use and protection of the thermal waters. But before we can speak about it, we must decide if it is acceptable at all to drill hot groundwater. Will it lead to the cooling of our planet? It is too early to be concerned about it now because we take away only a small part of the warmth of ground resources which also replenish due to radioactive decay.

This is why, they explained, it was too early to speak about the limitation of the use of the Earth's warmth. Yet, they warned, "do not kill the golden goose, especially a goose capable of delivering golden eggs over the course of thousands of years." However, they insisted that it was not possible to exploit any ground water without knowing the speed at which it replenished, and it was equally important to calculate the cost of drilling, "how much water to extract, how to rationally use it, what benefits it will give, and, finally, where to release the waste water."[38] The improvement in the use of natural resources was possible due to the rational calculations intended to quantify the limits of nature.[39] The scientific service of industrialization and modernization aimed to use rational knowledge for the improved exploitation of nature and resources for stable economic growth.[40] As many believed, science was to provide the basics for the rational use of natural resources, "which defines the economic and industrial potential of the country."[41] The limits of the available natural resources, on the one hand, and the push for increased production and full-scale modernization, on the other hand, made economizing a crucial instrument of Soviet politics. Economizing, like rationality, was an ambiguous concept that combined the growth rhetoric that proliferated across various official documents and speeches with scientific dimensions. They both promised a harmonization between the demands and limits of natural resources.

Rationality as an industrial experiment

The notion of rationality also provided the intellectual infrastructure and justification for industrial and scientific experimentation with waste materials that re-

38 Shishkin, "Energiia termal'nykh vod," 103.

39 Mikhail Guzev, *Ekonomicheskie interesy i stimulirovanie ratsional'nogo prirodopol'zovaniia v razvitom sotsialisticheskom obshchestve* [Economic Interests and Incentivizing Rational Use of Natural Resources in a Developed Socialist Society] (PhD. diss., Rostovskii gosudarstvennyi universitet, 1984).

40 S.G. Sinitsyn, *Ratsional'noe lesopol'zovanie* [Rational Forest Use] (Moskva: Agropromizdat, 1987).

41 N.V. Mel'nikov, "Problemy ispol'zovaniia prirodnykh resursov" [Problems of Natural Resource Use], *Priroda*, no.9 (1967), 115.

mained after industrial operations. One of the most celebrated examples of this was the use of wood waste to rationalize the exploitation of forest resources. The idea of no-waste production became a guiding vision for those foresters, who believed that rationality could be implemented across industrial operations in forests and at wood processing enterprises to preserve forest wealth. The rational use of resources also gained traction in the food industry, justifying a shift toward more "rational and economically effective use of the main industrial funds" during the economic reforms of the 1960s.[42]

The growing emphasis on rationality partly stemmed from large-scale debates surrounding nationally and internationally significant natural sites, such as water basins. The infamous fight over the construction of cellulose factories on the shores of Lake Baikal in the 1960s – traditionally viewed as a national treasure and unique natural gift – provoked a political reaction. Scientists and engineers who insisted on protecting Baikal from pollution to ensure water purity for cellulose production were influential enough to prompt the development of a specific water treatment model, even though they did not halt factory construction. The Baikal conflict produced a new, though limited, model of nature-human relations, despite the ongoing contamination of the lake. The Baikal complex encouraged the development of so-called bioeconomic systems – economic models designed to account for broader relationships with the natural environment.[43] Technologically, the debates led engineers in Leningrad to experiment with solutions for the "Baikal scheme" of water treatment. The public reaction and technological responses reinforced the dominance of rationality in official political discourse. Rather than focusing on the wastewater produced by strategic industries, however, the state increasingly emphasized the ecological behavior of citizens, which it claimed caused economic losses.

Specialists often noted that, beyond better management, it was also possible to process food waste and agricultural products more efficiently. Inspiration came from advances in chemistry and its growing role in food science and production, which made it possible to substitute natural materials with more economical syn-

42 O perevode predpriiatii pishchevoi promyshlennosti na novye usloviia planirovaniia i ekonomicheskogo stimulirovaniia promyshlennogo proizvodstva, 1967 [On the Transition of Food Industry Enterprises to New Conditions of Planning and Economic Incentives for Industrial Production, 1967], Central State Archive of Saint-Petersburg. F. R-2225. Op. 4. D. 1575. L. 193.

43 Pavel Oldak, "Novoe mesto prirody v ekonomicheskikh issledovaniiakh [The New Place of Nature in Economic Research]," *Priroda*, no.2 (1973): 34. See also on working out the Baikal scheme and its environmental and political implications in Elena Kochetkova, "An Ecological Controversy: Soviet Engineers and the Biological Treatment Method for Industrial Wastewater in the 1950s and 1960s," *Ab Imperio* 1 (2019): 153–180.

thetic alternatives. Rationality provided a framework for finding alternative materials to address resource depletion. A key example was experimentation with perennial plants like reeds, proposed as substitutes for wood in producing inexpensive mass-consumption goods.[44]

Food science similarly offered broad possibilities for experimentation, such as replacing natural foods with synthetic substances – for example, by ceasing the extraction of ethyl alcohol from grain, potatoes, or beets. Synthetic materials came to symbolize progress and shaped visions of a scientifically guided future. Scientists believed these materials could help rationalize production by reducing the consumption of natural resources.[45] One method for producing ethyl alcohol involved hydrolyzing wood processing waste, which yielded technical alcohol from forestry by-products. Many pulp and paper enterprises built specialized facilities to use waste materials in producing ethyl alcohol for chemical industries, including agriculture, cosmetics, and food production.

The language of rationality supported these technological transformations and explained the ascendancy of synthetic materials as a rational response to economic needs. Science not only protected nature, it released its most valuable resources for other economic uses, minimizing waste by replacing natural inputs with synthetic ones. Producing ethyl alcohol from edible potatoes was considered wasteful; producing it from wood by-products was deemed rational and inherently progressive. Cost was a major motivator, as synthetic materials promised cheaper production. Scientific advances made it possible to transform previously uneconomic materials into food products. Thus, the issue of food waste – including the discarding of milk whey or cattle feed – drew sharp criticism and was seen as a sign of economic negligence.[46] In typical Soviet fashion, the irrational use of material and natural resources became grounds for criticizing managers and directors. Party organizations often blamed them for failing to utilize all materials involved in production and for wasting energy, fuel, and other resources.[47]

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44 Elena Kochetkova, "Industry and Forests: Alternative Raw Materials in the Soviet Forestry Industry from the mid-1950s to the 1960s," *Environment and History* 24, no.3 (2018): 323–347. See also on the use of waste and waste regime in Zsuzsa Gille, *From the Cult of Waste to the Trash Heap of History: The Politics of Waste in Socialist and Post-Socialist Hungary* (Bloomington: Indiana University Press, 2007).

45 Anatoly Averbukh, *Zamena pishchevogo syr'ia v promyshlennosti* [Substitution of Food Raw Materials in Industry] (Leningrad: Lenizdat, 1959), 37.

46 P. Groizman, "Porogi na molochnoi reke" [Rapids on the Milky River], *Vyborg*, April 5, 1991, s. 4.

47 Protokoly zasedanii Komiteta narodnogo kontrolia, 1966 [Minutes of the Meetings of the Committee of People's Control, 1966], The National Archive of Estonia. F. R-2158. Nim. 12. L. 19.

When experimenting with synthetic materials, scientists often invoked rationality as a means to address modern social challenges. One prominent academic debate in the mid-1960s to 1970s focused on global overpopulation. Scientists treated this as a critical future issue and proposed chemistry as a solution to food shortages. As academician Nikolai Zhavoronkov wrote in his article titled "*Will the Human Have Enough Food Resources? What Chemistry Will Be Asked For To Provide the Globe with Food?*" agricultural soil was limited. He added that "the best way to quickly increase the amounts of food resources is to conduct chemicalization [*khimizatsiia,* or intensification of chemical use.– E.K.] of agriculture and farming and enlarge the use of chemical fertilizers in the first place."[48] Others, like academician and head of the Academy of Sciences Alexander Nesmeyanov, went further, conducting experiments to synthesize food from oil and other non-agricultural materials. Less radical were the calculations for producing fodder yeast to increase outputs of pork, chicken, eggs, and milk. As Zhavoronkov put it, "the human has such [a powerful] knowledge and technique which, if not used in the name of crime and military aims, open grandiose perspectives to us. One of the most generous tasks of today and tomorrow is to provide every person with full-valued nutrition."[49] Calculating the benefits that science and technology could bring to society resulted from the rational approach to the natural and social order. If used rationally, for the benefit of the economy and society, science and technology could both prove valuable for modern development.

However, this scheme encountered obstacles in the reality of the planned economy – a setting poorly aligned with the ideas promoted by optimistic scientists and engineers. Soviet economic realities, including shortages and irrational logistics, often diverged from professional aspirations, leading to criticism of existing practices. The gap between projected progress and actual practice led to increasing dissatisfaction among specialists with the Soviet Union's economic and environmental performance.

A lack of rationality in particular, was often blamed for damage to fish populations, contamination of water, and the wastage of food that could have been redirected to animal husbandry. Soviet individuals were also blamed: some scientists warned of the negative effects of human activity on the Earth. As academician and geologist Evgeny Sergeev stated in 1977, "man is becoming the biggest ge-

48 Nikolai Zhavoronkov, "Khvatit li cheloveku prodovol'stvennykh resursov? Chto potrebuetsia ot khimii dlia obespecheniia Zemli prodovol'stviem?" [*Will the Human Have Enough Food Resources? What Chemistry Will Be Asked For To Provide the Globe with Food?*"], *Nauka i zhizn'* 5 (1965): 7.

49 Ibid., 9.

ological force."[50] Advocating the limits to growth, he warned that irrationality and *short-sightedness* were key contributors to environmental destruction: "We must remember the negative consequences of technical activities."[51]

The challenge of scaling laboratory experiments using natural materials to the level of the national economy proved significant. Scientists stressed the need for sustained rationality in the audacious political campaigns undertaken by the Soviet regime in the Eastern parts of the country. Western Siberia became one of the playgrounds for post-war large-scale modernization and the active excavation of natural resources, and this enormous portion of the earth was the target of substantial transformation.[52] In scientific criticism, nature was a gift giver to be treated carefully, and thorough calculation of economic effects was thus needed, along with measures to define the sensitivity of exploitation and the rational distribution of resources. Science was useful as long as it could provide alternative materials to natural resources. As economists S.G. Strumilin and E.E. Pisarenko wrote in 1977, the rational approach to the interplay between the economy and nature created the basis for social benefit. Rationality implied the possibility of engineering nature: "It is time to stop exploring nature as such and move to projecting the new, human-desired environment and the rational human control of the evolution of biosphere."[53] The increase of the productivity of nature was therefore crucial, and its outcomes quite successful in forestry, for example, through greater, more rational planning of cutting, reforestation, and the use of wood waste and industrial waste left after harvesting and processing operations.[54] As one specialist put it, "the rational use of forests… is only possible when one forest organism binds together all the elements of forestry which connect forest exploitation and reforestation with other economic activities."[55]

The international context – particularly Western discussions of growth limits – also influenced Soviet notions of rationality. Growing concern about environmental degradation in Europe left its mark on Soviet discourse. Commentators ref-

50 E.M. Sergeev, "Ratsional'noe ispol'zovanie geologicheskoi sredy" [Rational Use of the Geological Environment], *Priroda*, no.1 (1977): 85.

51 Sergeev, "Ratsional'noe ispol'zovanie geologicheskoi sredy," 87.

52 Sergeev, "Ratsional'noe ispol'zovanie geologicheskoi sredy," 91.

53 G. Strumilin, E. Pisarenko, "Ekonomika i statistika 'darovykh' blag prirody" [Economy and Statistics of Nature's 'Free' Gifts], *Priroda*, no.1 (1977): 3. See also I.P. Gerasimov, "Unikal'naia priroda Tsentral'nogo Predkavkaz'ia" [Unique Nature of Central Predkavkaz], *Priroda*, no.12 (1979): 3.

54 Mako Dakov, "Budushchee bolgarskikh lesozagotovok" [Future of Bulgarian Timber Harvesting], *Lesnaia promyshlennost'* 12 (1971): 28.

55 "Polveka nazad v nashem zhurnale" [Half a Century Ago in Our Magazine], *Lesnaia promyshlennost'* , no.12 (1972): 14.

erenced international agreements and legal frameworks. In 1975, *Pravda* reported on the Meeting on Security and Cooperation in Europe held in Helsinki, stating: "the protection and the improvement of the environment, as well as nature protection and the rational use of her resources in the interests of todays and future generations, are among the tasks which have a huge meaning for the prosperity of people and economic development of all countries." It further argued that "many problems of the environment… can be effectively solved only by close international cooperation."[56] Citing the international context, Soviet commentators supported economic growth but stressed the need to balance production with environmental care. In 1979, the Central Committee and the Council of Ministers issued a joint decree "On Additional Measures for Increasing Nature Protection and Improving the Use of Natural Resources," which emphasized both "the protection of nature" and "the rational use of natural resources." As one commentator put it, "nature protection in the Soviet Union implies the complex of measures on the rational use and replenishing (*vosproizvodstvo*) of natural riches."[57] A 1981 decree of the Central Committee reinforced this position, calling for intensified economic development while reducing input costs and resource consumption.[58]

By the late Soviet period, nature was increasingly understood as an agent – more than a store of materials, it came to be seen as a complex actor deserving of scientific attention. The idea of rationality thus began to include this new agency of nature in regulating human-nature relations. While the prevailing scientific view remained grounded in industrial logic, it was now more nuanced and favored softer forms of control. Science assumed a more paternalistic role, aiming to improve nature's economic value through closer integration with society. This line of thinking continued into the Perestroika period, when officials increasingly

56 "Soveshchanie po bezopasnosti i sotrudnichestvu uspeshno zaversheno" [Meeting on Security and Cooperation Successfully Concluded], *Pravda*, August 2, 1975, 1.

57 A.N. Lavrishchev, Ekonomicheskaia geografiia SSSR [Economic Geography of the USSR]. Moskva, 1986, accessed July 9, 2025, https://economics.studio/ekonomicheskaya-geografiya/ohrana-prirodyi-sssr-ratsionalnoe-ispolzovanie-32088.html. See also Evgeny Gololobov, Daria Ashikhina, "Ekonomicheskie aspekty ekologicheskogo regulirovaniia v SSSR v 1970-e-80-e gg." [Economic Aspects of Environmental Regulation in the USSR in the 1970s–1980s], *Vestnik Tomskogo gosuderstvennogo universiteta. Istoriia* 84 (2023): 5–10.

58 Postanovlenie TsK KPSS i SM SSSR "Ob usilenii raboty po ekonomii i ratsional'nomu ispol'zovaniiu syr'evykh, toplivno-energeticheskikh i drugikh material'nykh resursov," 1981 [Resolution of the CPSU Central Committee and the USSR Council of Ministers "On Strengthening Work on the Economy and Rational Use of Raw Materials, Fuel-Energy, and Other Material Resources," 1981], accessed July 9, 2025, https://tehnorma.ru/doc_ussrperiod/textussr/usr_10812.htm.

criticized the shortcomings of the Soviet system, even though resource waste and environmental crime had long been subjects of internal critique.

Conclusion: soft dominance over nature

The term *rationality* served as an instrument in shaping human–nature relationships in the Soviet Union, used to justify less environmentally destructive modes of resource extraction, even as the primary value of nature remained economic. It reconciled nature protection and economic efficiency stemming from the material shortages and economic constraints of the Soviet economy, which demanded that natural resources be more carefully distributed and efficiently used. Increased productivity was not to come from nature itself, but from transforming industrial practices and economic habits. Science and technology were viewed as the tools for enacting this transformation, and professionals increasingly invoked rationality to address environmental and resource-related challenges. Rationality, in this sense, did not merely imply the subordination of nature to human will or political power; it called for a calculated and optimized engagement with nature to derive the greatest possible benefit without complete exhausting its reserves.

Engineers and scientists largely remained committed to the industrial discourse that positioned nature as a resource base. However, they gradually changed their perspective on how they imagined the interaction between society and nature. They expressed growing concern regarding the environmental and economic consequences of wasteful practices – such as those seen in the Baikal conflict or widespread deforestation. Fears about resource scarcity maintained the influence of scientific and technical professionals in policy discussions, even if their ability to affect real change was limited. These actors emphasized the need for a rational approach to nature – one informed by the technological capacities of modern industry. The dream of waste-free production, the development of substitutes for traditional materials, and innovations in resource processing inspired many to envision transformed human–nature relations.

Because Soviet politics was deeply intertwined with scientific discourse, *rationality* became a politicized term, used to articulate how the state envisioned its relationship with nature under communism. Ideological portrayals of abundance and fertility rarely aligned with reality, and the persistent criticism of irrational resource use became part of the broader Soviet narrative about how to build a prosperous communist society. Rationality bridged the gap between political aspiration and material conditions, acquiring varied meanings and functions. By the mid-1960s, the rational use of natural resources therefore became a central topic in both official and professional discussions about how to structure the political

economy of nature in the Soviet Union and beyond. Rationality was expected to reconcile progressive scientific visions with the stagnation and inefficiencies that marked Soviet economic development.

This chapter has argued that rationality evolved into a distinct discourse which, when applied in industry, fostered a vision of *soft dominance* over nature within the late Soviet political economy. This was not a move toward ecological parity, but an attempt to forge more efficient relations between nature and industry – where nature was assigned a primarily economic role. Rationalization did not entail transforming nature itself, but rather intensifying its output through calculated planning and waste reduction. While it reflected concern for the future economic potential of natural resources, Soviet rationality did not seem to strive for ecological balance in the modernized society. Instead, it remained a veiled form of dominance over nature – less destructive than outright exploitation, but still deeply rooted in control.

One of the most enduring questions raised by this analysis concerns the interplay between *ideas* and reality. As historian Marija Drėmaitė insightfully asks, was the rational socialist society "imaginary or real?"[59] Political visions of communism overlapped with professional debates about rationality in the industrial reality, which came to represent both an aspiration and a critique. Rationality served as a justification for better resource use in the name of building communism, but was also a response to the persistent failure to achieve that goal. The contradiction at the heart of Soviet society – between ideological declarations and material realities – was embedded in the concept of rationality itself. Many experiments were only partially implemented, falling short of the ambitions of the era, including in the areas of automation and waste-free production. Rationality became a flexible, often ambiguous category: a way to interpret failure and to convey hopes for a future development that remained just out of reach.

Despite its contradictions, rationality remained a foundational concept in Soviet political and industrial development, serving to justify the directions of industrialization, modernization, and restructuring (*perestroika*). In this context, rationality continued to shape Soviet actions and the vision of progress well into the final decades of the regime.

59 Marija Drėmaitė, "Planning the Rational Soviet Baltic Society: Industry and Built Environment in Lithuania in the 1960s," in Modernism and Rationalization, ed. Caspar Jørgensen and Morten Pedersen (Aalborg: Gandrup Bogtrykkeri, 2006), 72.