

Introduction

RUSSIAN SCIENCE, PUBLIC CULTURE, AND THE BOLSHEVIKS

On a July 1933 evening in Moscow, over two hundred workers packed into an auditorium in the city to view an instructional film and to have a discussion with teachers from the voluntary technical educational group Technology for the Masses (TekhMass). After the showing, a fiery debate broke out between Communist technical activists and Soviet workers from various Moscow factories. The workers were interested in the practical, instructional aspects of such films dealing with, for instance, electro-welding. The films, however, much to the dismay of workers, also carried propagandistic messages of the virtues of Soviet technology in comparison to the capitalist West. On this particular night, workers boldly told activists to scrap the propaganda and to get on with the business of giving them needed, basic technical education these newly minted workers had never received from the countryside, or shop floor for that matter. Various TekhMass activists were stunned by the workers' critiques, which were blatantly apolitical; however, they also realized that they had to placate their complaints. Furthermore, the activists realized that, politics aside, their efforts toward scientific popularization depended on a core ethos that saw science as a practical tool with utilitarian goals for the everyday laborer.

The experience of various activists in the early Stalinist era demonstrates how Bolsheviks sought to bring a new science to the masses after 1928. Science during the Stalinist period took on an increasingly narrow meaning in the public realm. The Stalinist temple of science was the factory-shop floor and the machine, and productive capacity became an end in itself as scientific knowledge and epistemological inquiry were relegated to the background. Yet, this was not always the case in the early Soviet era before Stalin's revolution in 1928. There was actually great continuity between the tsarist and Soviet periods with regard to communicating the virtues of science to the undereducated. This was part of a greater European cultural movement stretching back to the roots of the Enlightenment. Furthermore, Russian scientists and educators of science themselves shaped to a large degree their own agenda and in the process contributed to a civic, public sphere before and after 1917.

Scientists and popularizers of science adopted rhetorical strategies to combat and accommodate initiatives by a Bolshevik state seeking to support but also to control and politicize their work. A symbiotic relationship developed between the state and those scientists because the Bolsheviks realized their dependence on such specialists to enlighten the masses. Yet, even before 1928 this relationship was paradoxically marked by great tension as well as cooperation. The science-popularization movement was a microcosm of the Bolsheviks' struggle during the twenties to develop their own cultural programs while they were still highly dependent on the old intellectual elite of Russia. Ironically, they shared many of the same values in the scientific realm, educationally speaking, even if they differed on the politicizing of knowledge.

However, efforts by militant atheists and radical activists hostile to compromise became increasingly successful after 1928 as the Stalinist state underscored the importance of nationalism, class warfare, and a myopic utilitarianism united with the immediate goals of industrialization and collectivization. Nevertheless, the science popularizers and the Stalinist regime still found reasons to cooperate, and the Stalinists recognized that they needed the popularizers to lead workers, many of them recent migrants from the Russian countryside, toward an appreciation of technology and to teach them particular technical skills useful at their job sites. To understand this evolving tension and cooperation between scientists and the Soviet state, one must consider the subtle sociopolitical patterns that arose in early Soviet society: namely, the simultaneous cooperation and struggle between regional and central agencies; considerable infighting among Soviet institutions of government; an encroaching bureaucratization and institutionalization of Soviet life after 1917; and finally, yet critically, the persistence of civil society across the revolutionary divide into the 1920s, and to a limited extent in the early Stalinist era.

The Soviet effort to popularize science in revolutionary Russia therefore provides a base from which to view and understand the expansion of public culture across the revolutionary divide, especially in the early Soviet era. Nevertheless, no major effort has been made in Western literature to analyze popular science in early Soviet (nor late tsarist) Russia. Historians of Russian science have not extensively analyzed the cultural resonance of science in revolutionary Russia,¹ nor have they focused singularly on the civic activity of these scientists.² Equally unaddressed, at least in any comprehensive way, are the intricate venues through which science was popularized in revolutionary Russia, the broad textual media involved in popular science, and how science reached beyond the educated elite.³

Historians of late Imperial and early Soviet Russian popular culture have

also touched on public science, but only in a peripheral sense.⁴ Furthermore, those who have looked at futuristic elements of Bolshevik culture mostly focus on the abstract, utopian concerns of Russian intellectuals (and Bolsheviks in particular) and not necessarily on the more public or even utilitarian, technical components of science that struck an imaginative chord with Russians from all walks of life: laborers, lower-middle-class functionaries, professionals, and others.⁵ It was in the interest of the state, as well as that of Russian intellectuals of the older generation, to connect with those undereducated Russians and to teach them the practical and visionary aspects of scientific inquiry. Early Bolshevik culture can be reconceptualized through an understanding of these eclectic elements, the practical and utopian. During the 1920s the Soviet state also had to accommodate the interests of both the old and new intellectual elite.

Only recently have historians of Russian science attempted to address the broad issue of scientific “public” discourse. Douglas Weiner, in his newest work on Russian nature protection, has argued that the ecologists in Stalin’s Russia maintained a sense of what he calls “scientific public opinion.” They formed defense mechanisms, which he describes as “protective coloration,” in order to survive and to continue their ecological work even under the repressive Stalinist regime. Yet, Weiner’s case study uncovered how ecologists formed a sense of public opinion that was elitist in nature; as they directed their critiques at the boorish regime, they believed that only they were the harbingers of true knowledge. Weiner also contends that his research on Russian ecologists points to their need to maintain preexisting corporate social identities, as well as independent professional positions. They were effectively shutting themselves off from the public’s more mundane interest in environmental concerns.⁶

Science popularizers displayed a different kind of public scientific discourse. Popularizers formed “public scientific opinion,” like other scientific subgroups, but they also uniquely supported broad, popular civic culture. Their interests both diverged and converged with the mass-enlightenment agenda of the Bolshevik regime. So, instead of looking down on Soviet mass, voluntary activity, popularizers embraced it and by doing so attempted to maintain their independent civic domains. Furthermore, science popularizers, unlike other scientific subgroups, represented radically diverse professional and ideological positions. They were unique, as an amorphous cohort, since they attempted to transgress professional, discursive, social, and class boundaries. These scientists and educators offer a case in point for analysis of how groups coexisted with the Bolsheviks and actively affected the Soviet state’s cultural agendas.

Science popularizers, unlike other Russian professional caste-like elites,

represented a point at which state, society, and scientists all converged in an expanding and contracting public sphere. As a group of Russian intellectuals, the popularizers were somewhat of an anomaly because they did not represent a singular corporate identity. Lastly, although the popularizers lobbied the new Bolshevik state for patronage, they manipulated their “protective coloration” in a manner that made their relationship with the state different from the relationship that shaped groups such as the Russian ecologists. Science popularizers highlighted their public enlightenment activities to show how their programs could converge with the atheistic state’s scientific vision of popularization. They adopted the rhetorical constructs of the Soviet state while accentuating those parts of their agenda that converged with the state’s pervasive platform. Since popularizers had supported public educational programs as part of their operations for decades before the revolution of 1917, fulfilling the Soviet state’s extra-curricular mission came naturally to them. Their activities represented strong continuities in scientific practice and civic activity across the divide separating tsarist and revolutionary Russia. Furthermore, an appreciation of the role of the popularizers highlights how the Soviet state’s enlightenment campaigns in the early period were not necessarily an innovation, or inherently Communist, but connected to prerevolutionary Russian trends.

After the October 1917 Revolution, the Bolshevik state supported the enlightened ideas of prerevolutionary Russian science popularizers, as well as young Communist scientists and activists who were interested in public culture. The goals and cultural vision of the Bolsheviks intersected and converged with those of prerevolutionary Russian intellectuals who also cherished the notion of bringing science out of the walls of academe and into the public realm. Both the Bolsheviks and scientific intellectuals saw science enlightenment as an inherently transformative venue for shaping Russian culture. From the very beginning of the Revolution in late 1917 and early 1918, even under adverse conditions, the Commissariat of Enlightenment’s Scientific Department (Glavnauka) donated huge sums of money to societies that had been the central source of science enlightenment in the late tsarist era.

Indeed, early Bolshevik culture can be viewed as having had a public scientific ethos at its core that would change and evolve at different stages, especially throughout the early Stalinist era. Recently, Nikolai Kremmentsov has emphasized, contrary to conventional wisdom, how Russian scientists fought and manipulated the Soviet system to maintain the purity of their scientific work and the coherence of their insular laboratory research after 1917.⁷ This scenario, while true for research biologists, does not properly describe the general rule for all science educators. On the contrary, though perhaps Russian scientists in the post-1917 era “worked” the Soviet state to

maintain their independent scientific research domains, they did not turn inward in an insular manner, away from both the state and society. Rather, Russian scientists seemed inherently driven to create a public domain for the discussion of science's role in society, both in the pre- and post-1917 era. Understanding the historical roots of public scientific activity in Russia might even offer a better understanding of the civic movement for public discussion of social issues during the 1970s and beyond that was spearheaded by scientific elites such as Andrei Sakharov and others.

Ultimately, the Soviet state itself fostered and supported the expansion of public science in the early 1920s and 1930s. Viewing and analyzing Bolshevik culture through the medium of science popularization allows us to bring together under one rubric many aspects of the modernization paradigm of that early revolutionary government: industry and the city v. the backward countryside; science v. religious superstition; futuristic and imaginative concepts v. the insular old world.

Chapters 1 and 2 look at the critical prerevolutionary development of the science-popularization movement in publishing and the rise of scientific societies as catalysts for this activity. Russian intellectuals in late Tsarist Russia were missionary in their zeal to popularize the virtues and importance of *nauka*, a term they used not only for science but also for progress and enlightenment. Although the Imperial Russian state under Peter the Great and subsequent tsars was originally interested in the utilitarian applications of scientific and technological developments, the task of spreading science beyond the walls of academe and into the public realm was left primarily to Russian popularizers. This diverse group of intellectuals included scientists, editors, educators, and teachers. They did not represent simply one corporate, professional identity, nor did they all espouse the same ideological perspective.

In the eighteenth century the process was undertaken by important scientific figures like M. Lomonosov and G. F. Muller, who had an institutional base in the Russian Imperial Academy of Sciences. During the early 1700s, state patronage was the driving engine behind the development and popular diffusion of scientific information in Russian society. However, later in the century during the time of Catherine the Great, independent enlightened publishers, like N. Novikov at Moscow University, used their new presses to spread science via popular pamphlets and journals. This development paralleled the similar efforts of French encyclopedists to spread Newtonian mechanics and scientific thought throughout Western Europe. As time progressed, enlightened intellectuals in Russia began to take control of the movement and connect it more to a developing public culture.

Popular geographic works were among the most widely distributed forms of popular-scientific literature up to the late eighteenth century in Russia. A certain patriotic and nationalistic sentiment in these publications surveyed Russia's vast territory and resources as the imperial empire expanded on its periphery. State sponsorship of certain geographical and geological publications emphasized the underlying importance of those works as textual media that spread ideas describing Russia's wealth and power.

Throughout the nineteenth century the movement to popularize scientific information among a broad sector of the populace in Russia became inextricably linked to the development of programs and journals in self-education. The movement caught on as well in America and Europe after the early 1800s, where science popularization was closely allied to adult-education programs. By the mid-nineteenth century, the development of natural-history museums and scientific societies in Russia altered the nature of scientific popularization. From that point onward the transmission of scientific ideas was not strictly limited to printed textual media. Popular-scientific lectures and exhibits in new museums were a potent tool in the spread of scientific ideas to various elements of the public. Russian natural-history museums spread in the capital and provincial cities, and they sometimes emulated, without wholesale copying, their European and American counterparts.

At the turn of the twentieth century in Russia, the production of popular-scientific works became more market driven. Publishing firms in St. Petersburg and Moscow promoted books on popular scientific themes. The popular reader was interested in a variety of themes, including the origin of the Earth, human evolution, and astronomy. The result was an increase in the publication of popular-scientific journals. The journal was a cheap and accessible source of scientific information for the Russian reader. As in the West popular journals contained advertisements to supplement revenue from subscriptions for the publishing houses.

In both Europe and Russia after the era of the French Revolution, science popularizers, voluntary organizations, and educators were thus involved in a much broader social process. Science popularization entailed sponsoring adult education, moving ideas out beyond the walls of academe, and creating public museums for wider social participation. This civic activity was part of a more general process of expanding the dimensions of the public sphere in Russian society.

Science educators and scientific societies continued to foster civic activity as they broadened the public sphere across the 1917 revolutionary divide. Chapter 3 begins the analysis of the post-1917 era by discussing the relationship between the non-Communist (and Communist) scientists in the 1920s and their new Soviet patron—Glavnauka, the Scientific Department of *Nar-*

kompros, the Commissariat of Enlightenment (or Ministry of Education). Pre-revolutionary scientists were as ingenious as young Communists in lobbying the new Soviet state for finances. They were able to use the language and rhetoric constructed by Narkompros to show how they would be an influential part of the Soviet state's cultural and scientific enlightenment campaign. After 1928 their lobbying efforts would become less successful, but they struggled all the same until their organizations in many instances were liquidated in the early 1930s. By adhering to and manipulating elaborate rituals in their dealings with Soviet state institutions, scientific societies were able to maintain their own independent sense of public identity within certain political limits. Science popularizers not only entered into symbiotic relationships with Narkompros, but skillfully kept the state from interfering in the direction of their public educational activities during the twenties.

Chapters 4 and 5 focus on popular culture during the twenties in Soviet Russia and on how the new Bolshevik scientific vision actually converged with the dreams and imagination of many urban Russians. A market for popular science had existed prior to the revolution of 1917, and at least until 1928 the public demand continued and was fulfilled by the explosion of popular-scientific journalistic activity in Soviet Russia. Though less the case for rural inhabitants, urban Russians from a variety of social backgrounds were fascinated with popular scientific material on a range of topics including air flight, new technology, and exploration of Russia and the globe. The Bolsheviks helped foster these publishing ventures that temporarily fulfilled the state's goal of scientizing Russian cultural norms and educational curricula. Furthermore, Russian readers in the 1920s were fascinated with the feats of foreign technology, and the regime did not attack that cosmopolitan perspective until the mid-1930s. The topical interests of the urban public converged with those promoted by the state in this interim period. This convergence is manifest in the comparison of thematic content, covered in chapters 4 and 5, between non-party and Communist Party/Soviet state publications in the 1920s.

Chapter 6 will view the antireligious campaign as an outgrowth of the Bolshevik cultural vision of bringing "science to the people." In this unconventional interpretation, the antireligion campaign can be seen more as a means to achieve a scientized culture—a venue for science popularization—and less as an end in itself. An analysis of the scientific content of antireligious propaganda is critical to a broader understanding of the Bolshevik program of cultural enlightenment in the 1920s. The Communist Party modified its antireligious propaganda due to much resistance in the local and rural areas and settled instead on long-term scientific, educational planning. That long-term strategy involved sponsoring science popularizers' activities in aiding

antireligious activists, as well as promoting Darwinism and diverse evolutionary theory in the schools and popular press. The regime became dependent on those non-Communists in the scientific and educational community to spread evolutionary and antireligious doctrine.

The era of the New Economic Policy (NEP, 1921–27) is a complex time for cultural historians to analyze because the NEP was a transitional era wedged between two radical periods of cultural transformation: namely, the Russian Civil War (1918–20) and the Stalinist Great Break (1928–32).⁸ During the period of the NEP the Communist Party and Soviet state (specifically *Glavnauka*) generously sponsored the popular-enlightenment efforts of many scientific societies, institutions, and publishers, while avoiding any severe political interference in their work. This approach accorded with the early Bolshevik concept of cultural revolution, which called for a gradual raising of educational, scientific, and cultural levels. With the end of the NEP in 1928, the Soviet state continued as the prime funding source for these societies and their enlightenment work. However, radical Communist factions and groups of intellectuals now launched an aggressive challenge to the authority of the prerevolutionary scientific intelligentsia. While their initiative might have come from below, these groups lent support to party resolutions and directives from above that demanded that all enlightenment activities buttress the socialist reconstruction of the economy.⁹ Chapter 7 offers an analysis of those confrontations within the larger discussion of science popularization in the era of the Stalinist “Great Break.” In 1928 the Stalinist state, managing from above, and radicals, fomenting from below, broke away from the mixed economies of the NEP era as well as from tolerance of the old cultural elite, which characterized NEP Russia.

Scholars have debated for some time the extent of “Bolshevization” of scientific and educational institutions in the period before Stalin’s revolution from above. Nikolai Kremontsov, in his monograph on Stalinist science, has argued that in contrast to the accommodating Bolshevik policy toward existing scientific research institutions in the 1920s, the Bolsheviks supported a more aggressive attitude toward educational institutions in the sciences.¹⁰ Kremontsov concurs with Michael David-Fox, who argues that in addition to reforming existing educational structures the Bolsheviks created a number of new “Communist” institutions, like the Communist Academy, in order to form slowly a Communist intelligentsia.¹¹ Other scholars, like David Joravsky, see the process of “Bolshevization” of scientific institutions as a more gradual development leading up to the late 1920s.¹²

The “Bolshevization” of scientific and educational institutions was less well defined during the period of the NEP than previous analysts are willing to concede. In the 1920s, prerevolutionary scientific societies were able to

justify their work and the funding they received from Narkompros by using the rhetoric of the Communist Party itself. They lobbied Narkompros officials to support their activities, arguing that their societies would actively take part in “enlightenment for the masses.” Both non-Communist intellectuals and Bolsheviks alike used the rhetoric of “practical enlightenment” to coexist in the period of the NEP. By 1929, however, the Bolsheviks were attempting to reorganize professional societies and organizations dominated by the prerevolutionary scientific and technical intelligentsia. Although radical Marxists had already begun to draw battle lines during the mid-1920s, they had been unable to muster enough support to purge completely the older generation of popularizers of science.

Throughout the course of the Stalinist cultural revolution (1928–31) tensions grew between young militants and the older generation of professors in the sciences. In the scientific realm, specific institutions, like VARNITSO (All Union Society of the Workers of Science and Technology for the Promotion of Socialist Construction), covered in chapter 8, helped to coalesce attacks against prerevolutionary societies and to serve as a spearhead for further criticism. VARNITSO, a powerful central organization, had ties to key Communist Party members, and its attacks against specialists modified the nature and restricted the extent of the public discussion of scientific issues during the 1930s and beyond. VARNITSO dictated to older established institutions the parameters of popular scientific and technical education and defined more clearly the new politicized rhetoric. During the Great Break, radical science pedagogues, grouped in organizations like VARNITSO, criticized those educators who did not link science education to practical economic tasks. Even within Glavnauka, the radicals openly challenged their associates, whom they accused of propagating material and a point of view divorced from immediate economic and industrial needs.

An analysis of rhetorical and survival strategies as a methodological approach can reconceptualize the dynamic process of cultural revolution by highlighting fundamental sociological tensions and patterns. Scientists and educators came up with a variety of survival tactics before and even during the period 1928–32. Prerevolutionary organizations and intellectuals tenaciously shaped their public personas within the changing parameters constructed by the Soviet state. Scientists and educators in the early Stalin era attempted to “work the system” even when many did not support the state politically or ideologically. Unfortunately, by the early to mid-1930s, many of their attempts both to survive and to cultivate public culture became problematic, given the new political and bureaucratic constraints from above.

Scientists and educators continued to use the Communist Party’s rhetoric as a means to gain financial support. During the period of the Great Break,

however, the new militants were more effective at using the rhetorical phrases of “class war,” “utilitarianism,” and “Marxist dialectics” that the Party had unleashed. Independent, voluntary Communist organizations fashioned their own public images and lobbied state institutions for patronage support. The young militants isolated their opponents and placed them on the defensive throughout the early 1930s. Science educators from the old and new generation were competitors in an era of limited resources and politicized educational policy.

In the early Stalin era, Soviet state officials believed that the spread of science and technology had to coalesce with the Communist Party’s utilitarian needs to revive the industrial sector of the economy.¹³ Initially, radical scientists and propagandists attacked older, prerevolutionary voluntary societies for not aiding the socialist reconstruction of the economy. Eventually, these Communists organized their own mass organizations to aid the economy and to fulfill other tasks, like educating workers. TekhMass, discussed in chapter 9, was one of the new voluntary organizations designed to promote the technical education of workers in order to integrate them into the factory environment of the First Five-Year Plan (FFYP). This extensive organization relied on operating cells throughout the former USSR, and its functioning reflected how the nature of science popularization changed during this era. Although they were fostering the Party’s mass propagandistic and economic agendas, Communist voluntary societies, like TekhMass, also provided basic needs for those laborers who wanted more guidance in areas where they never received formal educational training. These organizations converged with the needs and demands of the undereducated worker-peasants entering the urban areas who were interested in more utilitarian forms of science and technology. These new workers became fascinated with journal articles that applied to their jobs and life in a practical sense. Workers’ criticisms and petitions to technical educators well illustrate the degree to which laborers were emphatic in their demands. These petitions provide further evidence of public criticism in Stalin’s Russia, especially in the scientific and educational realms.¹⁴

This convergence of the demands of the new Stalinist state, the focus of new Communist voluntary societies, and the needs of the changing work force was reflected in both public policy and in the content of the popular scientific media. Chapter 7 analyzes the fundamental changes in the content of popular science in Stalin’s Russia during the cultural revolution. Unfortunately, after 1932 even the Communist educators who were militant members of these organizations came under the control of the party. By then the Soviet state prompted the name change of TekhMass to *Za Ovladenie Tekhnikoi* (All-Union Society for the Mastering of Technology—ZOT) in or-

der to harness its resources for use in Stalin's mass propaganda campaign "The Party and Workers Should Master Technology . . . Technology Decides All." Societies like TekhMass were reorganized, given new names, and became conveyor belts for Stalinist cultural campaigns in the mid-1930s. The Stalinist mass technology campaign was a pervasive focus of many editorials in popular science journals and the popular press during the early Stalin era. This new technologically oriented popularization campaign was of primary importance to key Communist Party leaders and reflects the emphasis the Party placed on popular-technological education programs.

Ultimately, a series of new convergences, different from the NEP period, occurred in the arena of mass technical education and Stalinist popular culture. Workers, who did not have any formal training in specific areas, received needed advice and technical courses at night to improve their qualifications during a tumultuous period. The program and vision of various Communists in the new technical organizations were simultaneously supported by their targeted audience below and reinforced by the regime from above. Finally, the Stalinist state harnessed young Communist scientific activists to fulfill its utilitarian goals of practical technical education, while promoting its own cultural vision of the new, modernized, futuristic society. This Stalinist vision emphasized applied science and how the Soviet Union would become a technologically advanced society. Although that vision built on earlier scientific constructs developed during the NEP by the Bolsheviks, it changed those approaches and tied them more directly to industrial development. It was a futuristic cultural vision of technology shaping and supporting mass Soviet society. In essence the enlightened, imaginative vision of public science that crossed the revolutionary divide became transformed after 1928 into applied science and technology for the masses of workers at the job site. What eventually arose from this cultural ferment was a new Stalinist proletarian temple of science.