WE MODERN PEOPLE
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WE MODERN PEOPLE

SCIENCE FICTION AND

THE MAKING OF RUSSIAN MODERNITY

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Introduction
Science Fiction and the Making of Russian Modernity

Science and technology are defining modern reality by transforming not just everyday life, but the very ways in which we think and imagine. A new kind of writing called научная фантастика, scientific fantasy, is playing a not inconsequential role in this process. Is it not in the imagination where bold theories and amazing machines are first born? Along with news of the latest scientific and technological developments, therefore, our magazine will continue to present a rich panorama of meditations on their potentials that will seem anything but fantastic to those of our times.

Opening the fifth-anniversary issue of Nature and People (Природа и лиду) in 1894, this editorial note redefined the narrative parameters of a pioneering popular science journal in Russia. Three decades later in 1923, Yevgeny Zamyatin—author of the landmark dystopian novel We (Мы), which George Orwell acknowledged as an inspiration for 1984—designated научная фантастика, or scientific fantasy, “the kind of literature that best commands the attention and wins the belief of us modern people.” Consequently, he proposed it as the foundational template for a “New Russian Prose” of the twentieth century:

Modern life has lost its plane reality. It is projected not along the old fixed points, but dynamic coordinates of Einstein, of the airplane. In this new projection, the best-known formulas and objects become displaced, fantastic, the familiar—unfamiliar. . . . And these new beacons clearly stand before the new literature: from “daily life” to “realities of being,” from physics to philosophy, from analysis to synthesis.

The striking continuity between the two passages reveals that a distinctive category of writing called научная фантастика, which I have translated as “scientific fantasy,” began to be recognized, produced,
and consumed in Russia long before the American editor Hugo Gernsback introduced the term science fiction to the English-speaking world in 1926. Its defining features, furthermore, corresponded closely with what Darko Suvin would theorize as estrangement and cognition, the “necessary and sufficient conditions” of science fiction. While the 1894 editorial stressed that it required a modern, techno-scientific sensibility on the part of both writers and readers, Zamyatin celebrated its unprecedented potentials of defamiliarization.

Even more remarkable, however, is the fact that long before science fiction came to be called a genre in the West and merited with due critical attention, its Russian equivalent seems to have metamorphosed from a novelty of popular culture to an integral part of intellectual debates about the best way to engage with the new realities of the unfolding twentieth century. What accounts for the emergence of science fiction avant la lettre in Russia? Why and how did it proliferate so rapidly and acquire such prestige in a context whose actual state of modernization was famously described by Leon Trotsky as “combined and uneven development”? The answer may be found in a unique symbiotic link between genre and time repeatedly invoked by the passages cited above. For editors, practitioners, and critics alike, the new category of writing was inextricably bound with the concept of modernity, or sovremennost’. Science fiction in the Russian context, therefore, connoted much more than a by-product of the consciousness that science and technology had become the primary driving forces of modern life. As both Zamyatin and the editors of Nature and People take pains to emphasize, it evolved into an important participant in the formation of that consciousness.

By privileging science fiction as a crucible of actual techno-scientific innovation and equating news reportage with speculative extrapolation, Nature and People blurs the boundaries between the representation of modernity and the realities of modernization. Zamyatin goes one step further: He compares the effects of this new kind of writing to the cognitive revolution brought about by actual developments such as the theory of relativity and the technology of aviation. His prescription for a new model of national literature, therefore, invests science fiction with the radical function of modernizing not just Russian life but also the Russian mind. For Zamyatin, its poetics of estrangement trans-
form science itself into a new metaphysics, and elevates technology far above the level of novel artifacts. What were previously perceived to be mere analysis and mechanics become portals for entering a higher state of existence, a “reality of being” (bytie) quite different from mundane “daily life” (byt). Science fiction thus provides the road map for a new class of subjects, whom Nature and People calls “those of our times” and Zamyatin designates “we modern people,” to reinvent their lives, realities, and even beliefs.

This book explores how science fiction became a way of not just telling but also of making modernity in Russia. Bold as the proposition may have sounded in 1894 or 1923, it seems particularly apt from the vantage point of our own present, widely understood to be in the midst of a similar transformation of which science and technology are also the chief driving forces. Like relativity or aviation at the turn of the twentieth century, genomics and robotics, information science and digital media, have come to constitute primary indices of tremendous upheavals in our contemporary life and reality. Modernity, meanwhile, has reemerged as the principal optic through which the causes and consequences of such upheavals are being analyzed and codified. Not coincidentally, science fiction in the last few decades has developed into a rich field of critical inquiry as well as a potent platform for theorizing our historical present.

Science fiction’s “not inconsequential role,” to quote Nature and People, in current debates about modernity is more than apparent in Fredric Jameson’s recent Archaeologies of the Future.6 Essays compiled in the volume demonstrate that many of the author’s groundbreaking observations on society and culture under late capitalism had germinated from analyses of science fiction. For a considerable time, in fact, science fiction has been providing critical metaphors for a plethora of new concepts, including Jean Baudrillard’s “simulacrum,” Donna Haraway’s “cyborg,” and Katherine Hayles’s “posthuman,” which have thoroughly permeated our vocabulary for understanding, being, and acting in today’s world.7 As Istvan Csicsery-Ronay puts it, “Science fiction has ceased to be a genre per se, becoming instead a mode of awareness about the present.”

The startling resonance between this recent assessment and early descriptions of science fiction in Russia provides the motivations
and objectives of this book. Growing recognition of science fiction as a mode of awareness about the present attests to the close correlation between the formal and institutional emergence of the genre and the history of modernity. The site for investigating their relationship, however, is largely limited to the Western or more specifically Anglo-American context, in which science fiction responds to a unified experience of modernization and a univocal discourse of modernity. This book shifts the terrain of inquiry to reveal a much more complex and distinctive dynamic between science, technology, the work of imagination, and the imagination of what it means to be modern.

Russia provides a particularly rich field for such an investigation because it defies classification as either a part of the West or its distant Other: It is European but also Asiatic, techno-scientifically forward thinking yet industrially backward, rich in utopian ideologies yet culturally pre- or antimodern. How might Russia’s ambiguous spatial history be related to the preternaturally early designation of science fiction as a constitutive agent of modernity? And what does this tell us about the role of literature in producing the sense and state of being modern?

By posing such questions, this book looks away from the dominant vantage point of scholarship on Russian science fiction. Emerging at the precise moment of the Cold War when, following the Sputnik launch in 1957, the Soviet Union began to be perceived as a technological rival of the West, practically every study of Russian science fiction is framed by the twin axes of the Space Race and the relative liberalization of the Thaw period following the Stalin years. Although talented writers of the 1960s and 1970s such as Ivan Efremov and the Strugatsky brothers opened up a genre hitherto unavailable or deemed unsuitable for serious inquiry both inside and outside Russia, the conditions under which Russian science fiction first attracted scholarly attention have decisively influenced the scope and methodology of its study as a whole. It is assessed almost exclusively in terms of a historic rupture with totalitarianism and an aesthetic rebellion against Socialist Realist literature mandated by the state. While the New Left hailed science fiction from the Soviet Union as a return to earlier forms of Marxist humanism untainted by Stalinist dogma or Western capitalist influences, scholars across the political spectrum saw it as a powerful mode
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of dissidence.9 A binary typology of propaganda or protest, conformist utopia or antiestablishment dystopia, functions in many works as a synecdoche for the entire body of Russian science fiction.10

This tendency is most clearly visible in the occasional historical overviews that precede extended analyses of the Sputnik era. A perception of ideology as direct and conscious manipulation by a monolithic state intersects in such prefaces with the anxiety of recuperating a respectable past for a kind of writing that is still relegated to the margins of canonical great literature, or velikaia literatura. In addition to constructing a reductive Soviet chronology—according to which, as Rafail Nudelman asserts as late as 1989, “pre-revolutionary narratives” are inconsequential for and incommensurable with the genre’s “real ideological function under Bolshevik nationalism”11—the impulse of aligning science fiction with a legitimate literary tradition erases the remarkable history of its emergence across literary and popular culture at the turn of the twentieth century. Leonid Heller, for example, locates space-age science fiction in a peculiarly Russian mode of politically dangerous writing, but cites only a few works from the early period that “transcend the primary function of the genre to entertain a mass audience.”12

Although more recent studies continue to focus on the Sputnik era, they reveal the necessity of examining Russian science fiction beyond rigid historical boundaries and hermetic distinctions between literature and entertainment. Richard Stites’s incorporation of speculative fiction in his seminal overview of revolutionary culture, Yvonne Howell’s study of fin-de-siècle apocalyptic eschatology in the Strugatsky brothers’ novels, a recent Science Fiction Studies special issue on the Thaw, and Matthias Schwartz’s illuminating monograph on popular science and science fiction of the space age celebrate rather than occlude its indeterminate position in intellectual and literary history.13 Instead of representing Russian science fiction as a culturally or ideologically uncontaminated endeavor, these works emphasize its unique crossover appeal among diverse audiences.

I adopt a similar approach in investigating the little-examined moment when science fiction first came to be recognized and theorized as a distinct category of writing in Russia. This book is devoted to the tumultuous decades between the 1890s and the 1920s, spanning the
fin de siècle and the early Bolshevik period, when it first acquired tremendous ideological currency and cultural prestige. It was also during this time, bracketed by the Nature and People editorial and Zamyatin’s manifesto for a new literature, that science fiction began to be written, read, disseminated, and discussed not just in literary circles and popular media, but also by scientists and engineers, philosophers and policy makers. Zamyatin, a professional engineer, cultural theorist, and prominent member of the literary avant-garde, represents the confluence of Russian scientists, social visionaries, and modernists who experimented with the emerging contours of science fiction.

Konstantin Tsiolkovsky, a mathematician and philosopher who began writing science fiction in the 1890s, was also an exemplary figure of this kind. Tsiolkovsky defended his choice of writing in the speculative mode as “the most effective way of conveying the ambitious yet esoteric horizons of my world-view”—a view that extended to the farthest frontiers of the universe, resulted in his posthumous lionization as the father of the Soviet space program, and immortalized him as the founder of a millenarian movement called Cosmism. Instead of academic journals, he chose Aviation Herald (Vestnik vozdukhoplavaniia), a magazine whose audience included both professional airmen and lay enthusiasts, as the first venue for publishing his futuristic hypotheses about venturing into outer space. Tsiolkovsky was convinced that its “astonishingly diverse body of readers, open to the true potentials of science and technology in the modern age, would not immediately dismiss my thoughts as mere flights of fancy.”

This statement, like the Nature and People editorial and Zamyatin’s manifesto, invokes a privileged relationship between science fiction and the consciousness of being, or wanting to be, modern. In order to understand this relationship and delineate its contours, this book expands the scope of examining both science fiction and modernity in the Russian context. Instead of reconstructing a literary history of the genre, as is the norm, I attempt a genealogy of the most distinctive feature of Russian science fiction: its symbiotic emergence with a uniquely Russian vision of modernity. Michel Foucault defines genealogy as an endeavor that “rejects the metahistorical deployment of ideal significations and indefinite teleologies . . . [and] opposes itself to the search for ‘origins.’” Its objects are precisely “what we tend to feel is
without history.” A genealogical approach is particularly suitable for
mapping the notoriously “nebulous genre” of science fiction vis-à-vis
the equally elusive condition of modernity in Russia.

An aspect of science fiction that has been widely theorized in the
West but not sufficiently explored in the Russian context provides a
generative point of departure for such an approach. Suvin contends
that science fiction challenges the notion of genre as a closed system
of textual antecedents with a traceable point of origin. Since its “mean-
ings and values” arise from “a differential dialogue with other struc-
tures of feeling within the all-pervasive, complex, and shifting field of
social discourse and its ideological tensions,” he cautions against “re-
ducing [its] production and reception to . . . an overly generalized con-
ception of ideology and an overly particularized examination of atom-
ized ‘influences.’” Jameson, likewise, characterizes science fiction
in terms of “generic discontinuity,” “a symbolic act that must harmo-
nize heterogeneous narrative paradigms.” Gary Saul Morson makes
a similar claim with regard to utopian fiction, which Suvin famously
called “a socio-political subgenre of science fiction.” Operating on
both “intra- and inter-generic dialogues,” utopias according to Mor-
son not only force the reader to forge links between disparate knowl-
dges but also challenge the reification of literature as an autonomous
enterprise. An interrogation in the same vein is essential for assess-
ing the synergy between the search for modernity and the emergence
of science fiction in Russia at the turn of the twentieth century. As Bir-
git Menzel notes in a recent review essay, the paucity of scholarship
on early Russian science fiction calls for a “bottoms-up” investigation
rather than a traditional genre study.

In order to provide such a “bottom-up” perspective, this book fo-
cuses on a period of intense upheaval during which science and tech-
nology, whose role in shaping and propelling modernity is so univer-
sally acknowledged as to be almost implicit, became particularly visible
in social discourses of modernization as well as cultural debates about
modernism. Marked by the advent of Darwinism and relativity, X-rays
and moving pictures, electricity and aviation, experimental psychology
and scientific management in the space of a few decades, what is vari-
ously called the scientific, technological, or second industrial revolu-
tion in the West also spurred a renewed effort of locating Russia on
the map of the modern world. It was at the turn of the twentieth century that science and technology truly began to dominate Russian discussions about the phenomenological, epistemological, institutional, and cultural parameters of modernity. In Reasons for the Decline and Rise of New Trends in Modern Russian Literature (O prichinakh upadka i o novykh techniiakh v sovremennoi russkoi literature), the founding document of Russian modernism issued in 1893, Dmitri Merezhkovsky noted, “We are present at a great, highly significant struggle between two views of life, two diametrically opposed world-views: the latest demands of religious experience are colliding with the latest conclusions of scientific knowledge.”²² “In the age of weakening not only of the old religious faith but also the humanistic faith of the nineteenth century, the sole remaining strong belief is the belief in technology,” declared the philosopher Nikolai Berdyaev.²³ Outlining the “immediate tasks of the Soviet Government” in 1918, Lenin advocated that Russia “must adopt all that is valuable in the achievements of science and technology from the West,” even though “like all capitalist progress they stand for the refined brutality of bourgeois exploitation.”²⁴ Behind such landmark statements, however, lies a vast unexamined arena in which science and technology also became democratized for the first time as accessible metonyms of modernity for a large number of Russians.

The scientific and technological revolution in the West coincided with a veritable explosion of popular print culture in Russia. From the late 1880s, which Jeffrey Brooks, in his seminal study of media and literacy, calls the “peak period of periodical publication,” science and technology began to emerge as the primary indices of a rapidly changing world that Russian newspapers and magazines hastened to bring home to their audience.²⁵ Reports about groundbreaking techno-scientific advancements occupied dramatically increasing space in large-circulation and limited-edition journals alike. In the illustrated weekly The Field (Niva), which Brooks notes “was read by an audience that extended from primary schoolteachers, rural parish priests, and the urban middle class to the gentry,” coverage of science and technology increased from about 10 percent in the mid-1880s to more than 50 percent in 1900.²⁶ The European Herald (Evropeiskii vestnik), a bastion of progressive thought previously devoted to philosophy and lit-
erature, also began to carry long features about the latest discoveries and inventions. From 1891 onward, *The Field* began to offer a special supplement on popular science every month.27

The strongest indicator of this trend was the appearance of magazines such as *Nature and People*, which programmatically devoted themselves to making the esoteric fields of science and technology accessible to the lay reader. *Nature and People* was followed not only by *Around the World* (*Vokrug sveta*), which continued publication through the Soviet period and is still read in Russia today, but also numerous other periodicals such as *Argus, Scientific Review* (*Nauchnoe obozrenie*) and *The Journal of the Latest Discoveries and Inventions* (*Zhurnal noveishikh otkrytii i izobretenii*). Publications dedicated to specific subjects that particularly excited the public imagination, such as physics, astronomy, paleontology, electricity, medicine, and flight, occupied a special niche in the new market of popular science magazines. *Aviation Herald*, which carried Tsiolkovsky’s science fiction, began circulating soon after the Wright brothers’ first flight and targeted aspiring professionals as well as amateurs. As proudly noted by the editors of *Nature and People*, most of these publications freely conflated journalism and speculative writing.

A shared lexicon of science and technology created an unprecedented bridge between cosmopolitan intellectuals and the burgeoning middle classes, Petersburg and the provinces, urban consumers and “rural primary schoolteachers and parish priests,” professional scientists and amateur enthusiasts, and most significantly, writers and their public. This heterogeneous collective constituted the first implied and real audience of science fiction in Russia. They devoured translations of Jules Verne, Camille Flammarion, and H. G. Wells, serialized alongside Russian science fiction writers on the pages of the same periodicals that also carried news about the latest techno-scientific developments, speculated about their implications, advertised technological trinkets, and announced demonstrations of scientific marvels.28 Despite, or perhaps because of, the uneven manifestations of technological modernization in everyday Russian life, science fiction became the self-identified narrative of a new imagined community that Zamyatin called “we modern people.”

The conjuncture between the scientific and technological revolu-
tion in the West and the rise of mass media in Russia reveals the inter-
textual, intergeneric, and indeed intermedial dialogue through which
science fiction emerged and engaged with its remarkably diverse audi-
ence. Consequently, this book does not limit its purview to the handful
of early science fiction writers who have been canonized as bona fide
precursors of the Sputnik era, such as the symbolist Valery Bryusov,
the radical Bolshevik Alexander Bogdanov, and Zamyatin himself. In-
stead, I situate so-called literary and popular works, including little-
examined experiments by prominent representatives of modernist
movements and proponents of major intellectual trends, in a much
larger continuum. Overtly fictional texts penned by both famous and
obscure authors are examined in close conjunction with a rich archive
of newspaper and magazine articles; advertisements; research papers;
philosophical treatises; visual culture; and, last but not least, official
and independent manifestoes on how to make Russia modern.

Within this network of texts, media, and discourses, science fiction
functioned not so much as a medium of literary representation as a
formally innovative, ideologically compelling node for synthesizing
various interpretations and critiques of the latest developments in sci-
ence and technology. Breaking the formal and functional boundaries
of genre, it also contributed new terms and paradigms to the real world
of research, development, public opinion, and public policy. Thus the
new kind of writing became not just a way of compensating for the
actual state of modernization in Russia but also an active participant
in the making of a uniquely Russian modernity. Unlike Euro-American
science fiction, it was imbued with a remarkable performative and
pedagogical function that cannot be easily summarized as either the
passive embracement of science and technology or antithetical re-
actions to their importation from the West. Instead, Russian science
fiction appropriated the principal instruments of capitalist modernity
to construct alternative models of development and progress, and even
to claim that Russia was more modern than the West.

Many studies of what Mark Steinberg calls “Russia’s notorious and
often obsessively self-aware ‘backwardness,’ its lateness to embrace
and experience industrialization, urbanization, and the contradictory
drives of modern discipline and disorder,” draw from Foucault’s con-
cept of discipline, Zygmunt Bauman’s model of self-deception, and
other critiques of modernity generated from within the West.²⁹ I find it more useful, however, to apply the insights of a recent movement that seeks not only to reexamine the history of modernity but also complicate its location. Foucault himself, along with Bauman and Jürgen Habermas, asserted that modernity is not an epoch but an attitude.³⁰ This amendment has been crucial for extending the study of modernity beyond Europe and North America. Modernity is increasingly being perceived as a multifaceted dialogue between regions, cultures, and ideologies rather than a unilateral flow from the West to the rest of the world. Global modernity, as Arif Dirlik defines, is “not a thing but a relationship, and being part of the relationship is the ultimate marker of the modern.”³¹ Given Russia’s ambiguous position in relation to the West, a genealogy of Russian science fiction must also be reconceptualized in geographical terms.

“Alternative modernities” has recently emerged as the focus of interdisciplinary scholarship on the variety of local, regional, and global forces whose combination shapes different versions of modernity in different parts of the world. Culture, not surprisingly, provides the most fertile ground for studying the complex dynamics of alternative modernities. Even though cultural phenomena cannot be quantified, as Dilip Gaonkar argues, they provide the best opportunity for conducting “site-based readings” of alternative modernities in specific contexts.³² Interacting with a wide range of cultural forms, institutions, and practices, Russian science fiction offers an exemplary site for studying the emergence of an alternative Russian modernity.

The starting point for such a reading can be found in the Russian term for modernity itself. Sovremennost’, a calque from the Greco-Latin synchronos, is not an absolute term but a relational one. Its usage, which is seldom historicized in scholarship on Russian modernity, has been traced to eighteenth-century debates following Peter the Great’s landmark efforts to transform Russia into a European-style nation-state.³³ Both the etymological and pragmatic origins of sovremennost’ reveal a hidden spatial dimension under its insistent temporality. Synchronization, by definition, implies that the normative temporal regime or chronos is located at a distance; the condition of sovremennost’, consequently, is located elsewhere as much as suspended in an indefinite future.
Once the spatial parameters of the Russian term for modernity are taken into account, its coupling with science fiction seems unsurprising. The greatest appeal of science fiction in Russia, as Zamyatin eloquently described, lay in replacing the everyday world of real or perceived backwardness with an imagined other world, shaped by science and technology yet liberated from the Western paradigms of development and progress. As a unique mode of accessing the elsewhere while transforming the here and now, Russian science fiction compels us, in turn, to reconsider the role of literary representation in the construction of alternative modernities.

The unique performative function of Russian science fiction explains its value for what Antonio Gramsci termed “cultural pedagogy”: when literature or art, playing on the deepest desires, anxieties, hopes, and fears of its audience, simultaneously enables them to perceive their world in a new way and provides them with the skills and dispositions necessary for inhabiting it. Within the framework of alternative modernities, cultural pedagogy assumes an even more important function. As Timothy Mitchell argues, in a situation where people become very familiar with representations of the modern but have little actual experience of it, representations quickly acquire the valence of the real. Russian science fiction’s overlapping ties with media, modernism, and millenarian thought—three highly performative platforms represented by *Nature and People*, Zamyatin, and Tsiolkovsky—gave it enormous powers of making modernity real for a remarkably large and diverse audience.

Gaonkar stresses that alternative modernities simultaneously “think with and against” the dominant narrative of Western modernity, forging a relationship with it that is both derivative and transgressive. This model of “thinking with and against” is particularly suitable for evaluating the kind of modernity inscribed by science fiction in Russia. As the historian Dipesh Chakrabarty notes, incompleteness and telescoping, which Trotsky codified as combined and uneven development, are not sufficient for describing the construction of modernity on the margins of the Western world. What sets it apart is the seemingly impossible synthesis between so-called traditional and modern concepts of time. Even though the emergence of science fiction in Russia was inextricably linked with the popularization of the
scientific and technological revolution in the West, its appeal lay in the potential for creating inimitable epistemological polyphonies between rationality and spirituality, individualism and collectivism, and most significantly for this project, historical and messianic approaches to time. Zamyatin’s characterization of science fiction as the mediator between physical mechanics and transcendental metaphysics offers a particularly rich example of the unprecedented possibilities that it opened up for bridging so-called Western and Russian ways of being and knowing.

Science fiction’s capacity for accommodating incommensurable temporalities also served as the basis for its dialogue with the modernist movements that emerged simultaneously in Russia. Both Russian science fiction and Russian modernism embodied unique ways of “thinking with and against” the iconic developments of the scientific and technological revolution. Yet, as Menzel notes, virtually no acknowledgement has been made of the ways in which science fiction influenced symbolism, futurism, or the revolutionary avant-garde.39 This book traces many circuits of transmission through which the cognitive experiments, representational strategies, and aesthetic effects of science fiction flowed into the spheres of high modernism, and vice versa.

In addition to challenging what Andreas Huyssen famously called the “great divide” between modernism and mass culture, Russian science fiction provided a novel way out of a widely theorized dialectic within Western modernity itself. Matei Calinescu summarizes this tension as a battle between “two modernities”: on the one hand, “the cult of reason, the doctrine of progress, confidence in the beneficial possibilities of science and technology, and the concern with time,” and on the other “aesthetic modernity, repelled by the bourgeois applications of reason, science, technology, and time and embracing instead a modernity of defiant rebellion, passion, and often an ambivalent or pessimistic vision of progress and the future.”40 In Russia, as Zamyatin’s manifesto for a new literature demonstrates, science fiction itself became the medium for liberating aesthetic modernity from the disciplinary limitations of rationality, development, and progress.

A geographical genealogy of Russian science fiction, therefore, also questions the implicit assumption that the October Revolution was the sole progenitor of a distinctively Soviet model of techno-scientific
utopia. This point is illustrated through the organization of the chapters that follow. Instead of chronology or authorship, the four sections of this book trace what I call narrative arcs of continuity between prerevolutionary and Bolshevik imaginations of alternative realities and futures. Titled “Conquering Space,” “Transcending Time,” “Generating Power,” and “Creating the New Human,” they illuminate the evolving contours of the four principal narratives through which science fiction etched out new locations and histories for Russia on the map of the unfolding twentieth century.

The first chapter, “Conquering Space,” examines the impact of science fiction on the fundamental index of modern identity, the nation. I demonstrate that the imaginary locales of science fiction, instead of serving as mere backgrounds to real geopolitical and historical processes, generate radically new ideologies and images of Russia. Three expanding spatial frontiers constitute the narrative arc that this chapter attempts to trace: the horizontal axis to the East, the vertical trajectory of flight, and breaking away from the planet into outer space.

In the cartography of science fiction, modernity was negotiated not in European Russia’s metropolitan centers but in a multitude of alternative environments discovered, charted, and penetrated by revolutionary developments in transportation and communications. The landscapes of science fiction transported Russia from a position of marginalized backwardness into a conceptual third space beyond West and East, where the instruments of territorial conquest and control become the means to decouple the nation from the dominant narrative of capitalist modernity.

The second chapter, “Transcending Time,” complicates the monolithic dichotomy of utopian and dystopian futurology through which science fiction in Russia is often defined and dismissed. Instead, it examines the emerging genre as an important medium for negotiating multiple, sometimes conflicting regimes of time, and thus a fertile ground for debating the very concept of the modern. The investigation is undertaken at two connected but distinctive levels: the experience of time in everyday life and the abstract arcs of history and teleology. Examining how technologies for compressing and accelerating time, including the locomotive, automobile, telegraph, and cinema, became parts of the Russian lexicon not only as objects of consumer desire but
also as grand metaphors of overcoming the nation’s backwardness, I argue that their popularity does not automatically translate into the collapse of local or private sensibilities or the triumph of a mechanical, homogeneous view of historical progress.

Through multiple texts and speculative proposals made for “bringing Russia up to par” both before and after the October Revolution, the chapter investigates why science fiction was uniquely suited for refracting and troubling the universal trajectory of development and progress. First, technologies of acceleration, instead of replacing traditional notions of time with an objectivist order of clock and calendar, became synthesized with private and/or premodern time. Secondly, by challenging the synchronization of technological and cultural modernity, science fictional narratives produced a unique poetics of simultaneity and excess. This poetics transformed them into important sites for resisting the scientific management of time and history, even though the popularity of Taylorism and Fordism in the Bolshevik period would eventually undermine this potential.

The third chapter of the book, “Generating Power,” traces the genealogy of a synthetic paradigm through which electricity, a source of energy whose production remained conspicuously low in Russia until the late 1920s, became a signifier of cosmogony and poesis much earlier than its designation as the primary agent of social change. This chapter traces the continuum through which electricity evolved from a technological novelty of the turn of the twentieth century into a privileged source of energy in utopian speculations, and from a metaphor of transfiguration in modernist aesthetics into the most potent metonym of vitality in the Bolshevik idiom. Science fiction, this chapter argues, played the crucial role of synthesizing what I term the “anodic” and “cathodic” modes of perceiving electricity, as a tractable natural phenomenon on the one hand and a mystical, supernatural force on the other.

The last chapter illuminates the role of science fiction in mediating and transcending two seemingly incommensurable impulses of reconfiguring humanity in the modern age: the secular forces of mechanization, manifested in capitalist technologies of biopower and the Bolshevik model of the New Soviet Man, and the Russian spiritual paradigm of God-building, in which imperfect humans can be transfigured into
physically and morally superior entities. “Creating the Human” traces an alternative narrative of non-teleological transformation beyond the utilitarian goals of evolutionary progress and biological engineering.

The chapter reveals the ways in which science fiction became an extraordinarily fertile venue for reinvigorating spiritual concepts such as kenosis and immortal life through new scientific insights such as the matter-energy continuum and radical biotechnologies such as tissue culture and experimental psychophysics. The resulting organisms, often populating alternative universes, embody unique critiques of both the standard model of modern humanity and the emerging template of the ideal Soviet citizen.
Conquering Space

In 1889, the Petersburg publishing house of P. P. Soikin launched a new magazine called *Nature and People*. The masthead of this “illustrated popular science journal for family reading” claimed to “bring the world into every Russian living room.” Five years later, an almanac published intermittently since 1860 called *Around the World* was revamped into an illustrated weekly specializing in “geography, travel, and exploration.” In the burgeoning market of popular print culture at the turn of the twentieth century, the new scientific illustrated magazines stood out not just for their preoccupation with space, but also for the particular moment at which the preoccupation manifested itself. Rather than lagging behind Western publications such as the *National Geographic*, founded in 1889, and *l’Annales de Géographie*, established in 1891, the Russian periodicals emerged simultaneously with them. Although they were not as systematic as their Western counterparts in bringing the dazzling expanse of the world to the lay reading public, their mission was identical: to cultivate a consciousness of space that was quintessentially modern.

A particular orientation toward horizons far beyond the reader’s experience and knowledge defined the novelty of the illustrated scientific magazine. In the title of *Nature and People*, the terms “nature” and “people” functioned not as referents to the domestic and familiar but rather as gateways to radically different environments and exotic ways of life. Using the dual connotation of the word *svet*, which can mean both light and the world, *Around the World* promised to cast light upon, and therefore make cognitively accessible, many remote, unimaginable facets of the globe. Through text and image, the magazines staged an unprecedented encounter with the elsewhere without the audience ever having to step out of the familiar sphere of everyday life. The implications of this encounter, however, extended far beyond
the enhancement of geographical, sociological, and anthropological knowledge.

Flooding the confines of “every Russian living room” with spectacles of far-flung places, the scientific illustrated compelled its readers to constantly reimagine their own sense of being in the world—a reflexive relationship between space and subjectivity that the philosopher Martin Heidegger would subsequently call “the very essence of the modern age.” Modernity (die Neuzeit), according to Heidegger, is generated from the dual process of “setting out the world before oneself” and “setting it forth in relation to oneself.” The emergence of space as a representable object, a “world-picture,” therefore becomes inextricably bound with “becoming a subject in the midst of it.”

Russian scientific illustrated magazines seemed to lay a further claim on Heidegger’s model of modernity. They explicitly attributed the world-pictures represented on their pages to the latest scientific and technological means of accessing, charting, and controlling space. At the head of every issue in Nature and People stood a picture depicting the open sea from a distinctly non-Russian-looking rocky shore.

What distinguishes this image from a traditional landscape is the insertion of two technological artifacts. In the foreground stand two human figures looking out through a telescope, while a steamship interrupts the even line of the distant horizon. Although these instruments for accessing and traversing vast distances seem diminutive
against the vertiginous cliffs and the daunting expanse of water, they have already conquered the sublime powers of the space surrounding them.

The titles of the new magazines also paid homage to the historical role that science and technology played in creating the modern perception of the world and shaping the modern idiom of the self. Nature and people coupled together invoked taxonomy, the system founded by Carolus Linnaeus in the eighteenth century for classifying all organic life in a single universal system. The fulfillment of Linnaeus’s vision, in turn, depended on advancements in transportation and navigation, which not only enabled bolder forays into remoter places but also fed the popular enthusiasm for exploration and created a global market for publications such as *Around the World*.

In her illuminating book on travel writing and imperialism, Mary Louise Pratt argues that an unprecedented conjuncture between new technologies of conquering space and new ways of representing distant corners of the globe gave rise to a “planetary consciousness,” which became the hallmark of the modern subject in the West and provided the ontological foundation for universal knowledge. Likewise, *Nature and People* and *Around the World* cast their readers not as passive spectators of others’ adventures in other spaces but rather as active agents embarking on their own journeys and creating their own pictures of the world. By “bringing the world to every Russian living room,” they simultaneously created the template for a new kind of Russian subject: armchair geographers, scientists, and explorers, familiar with the powers of science and technology and possessing a spatial consciousness that extended to the farthest reaches of the planet and beyond. Scientific illustrated magazines invited this imagined community, in turn, to envision Russia’s place and role in the brave new world of the twentieth century.

Conspicuously absent from their pages, however, are the cities and towns of European Russia, which not only served as the testing ground for national modernization projects but also provided, for a majority of readers, the only direct experience of how science and technology could transform the spaces of everyday life. Instead of St. Petersburg and Moscow, the magazines focused on the limitless steppe opened up by the Great Siberian Railroad, stratospheric heights experienced from
the airplane, and the immeasurable depths of the cosmos penetrated by purely hypothetical spaceships. This chapter explores the implications of this paradox. Did the spectacularly remote frontiers dominating the media affect the perception of what was not represented—the everyday space of the home and the conceptual core of the homeland? How did the fantastical projections of the elsewhere influence notions of Russia’s own geographical, historical, and cultural identity?

My approach to these questions draws upon the insights of an interdisciplinary movement called critical geography. Following Henri Lefebvre, I have found it useful to think about space as an evolving set of relations between the physical world and representations of the world, in which representations often shape individual experiences and collective ideologies of space. Representations, as David Harvey eloquently puts it, are hardly divorced from the reality of geopolitical negotiations and sociocultural formations: “They are as fiercely fought and as fundamental to the activities of space construction as bricks and mortar. . . . [a]nd it is precisely in this realm that all those political values of community, of nation and the like, begins its work.”

This conception of space as a field of contesting representations is particularly applicable to the Russian context. Ever since the eighteenth century, when Peter the Great sought to remake Russia into a Western-style nation-state, its liminal location between Europe and Asia has been an abiding source of existential anxiety. In spite of the establishment of St. Petersburg, a port and administrative capital that embodied Peter’s legendary desire of opening a window to the West, Russia continued to be viewed as a part of the backward Orient by the very Europeans it was trying to emulate. As a growing body of recent scholarship demonstrates, a potent way of resolving the debate about where Russia is was to create spaces against which it could be defined. Over the next two centuries, Russia annexed progressively distant frontiers starting from Crimea and the Caucasus in the South to Central Asia and Siberia in the East. By the turn of the twentieth century, its imperial dominions stretched all the way to the North Pacific. These territories constituted crucial points of contrast for delineating Russia’s geography, history, society, and culture.

Nevertheless, Russia continued to suffer from a unique crisis that Ronald Grigor Suny calls “dual peripherality.” Even after its main cities
had become the economic and political hubs of a vast multidirectional empire, their status as metropolitan centers of a modern nation remained suspect because of St. Petersburg and Moscow’s marginal position on the map of Europe. Peter Chaadayev’s *Philosophical Letters* of 1836 offers an iconic lamentation of this condition. Because Russia remained a “blank space . . . belonging neither to Europe nor to Asia,” he argued, it would never evolve into a proper homeland for its subjects:

> No one has a fixed sphere of existence, there are no good habits, no rules that govern anything. . . . We seem to camp in our houses, we behave like strangers in our families; and in our cities we appear to be nomads, more so than the real nomads who graze their flocks in our steppes, for they are more attached to their desert than we are to our towns.6

Chaadayev’s tropes of the nation as an absent core, its cities as meaningless chaos, and its inhabitants as perpetual nomads mirror the worst stereotypes associated with “our steppe,” the farthest reaches of the empire populated by its most primitive subjects. To extend the logic of the influential thinker, the project of nation building—putting Russia on the map, so to speak—would have to start not in its metropolitan centers but beyond its known frontiers.

Nationalist ideologies developed over the nineteenth century followed precisely this logic. In the task of negotiating a cogent identity for Russia and its people, the conquest of new territories became as significant as the enhancement of urban civilization. As Mark Bassin suggestively argues, “The prospect of political-territorial expansion was intended not so much as an appetite for control of foreign lands and people as to secure evidence of positive or even superior national qualities which could serve to raise Russia’s stature vis-à-vis the West. . . . Its real concern was, accordingly, not with the object of conquest and incorporation but rather with Russia itself.”7 Not surprisingly, literary representations of the empire provided some of the most fertile sites for imagining the spatio-historical contours of the nation (*natsiia*) as well as the ethno-linguistic profile of its subjects (*narodnost’*). As Susan Layton, Harsha Ram, and Katya Hokanson have demonstrated, far-flung imperial outposts that seemed especially alien or
daunting to the audience in European Russia assumed a particularly important role in shaping the foundational tenets of national history and culture.⁸

This chapter investigates a new kind of unfamiliar space that emerged at the turn of the twentieth century to capture the Russian imagination. It consisted of uncharted frontiers conquered by real or anticipated advancements in transportation and communications—the iconic catalysts of modernity that doubled as the tools of empire. Representing such spaces required a novel synthesis of discourses that created a direct continuum between the world picture of the scientific illustrated magazine and the alternative worlds of science fiction. The science fictional mode frequently employed by the media rapidly infiltrated a much wider range of cultural forms and institutions, from geography to astronomy and philosophy to poetry.

Although inspired by and imagined through real developments such as the Trans-Siberian Railroad, aviation, spectroscopic photography, and cinematography, these spectacular environments were only tenuously connected with actual places. In fact, like the sky or outer space, they often took off from the cartographic plane altogether. Rather than treating them as thinly veiled allegories of real geographical or geopolitical units, therefore, I build upon Jameson’s challenge to the dominant perception of science fiction as futuristic extrapolations in time. Jameson contends that science fiction is first and foremost a “spatial genre,” in which “the adventure is less of a character or collective than that of a planet, a climate, a system of landscapes—in short, a map.”⁹

The following sections trace the ways in which science fiction generated entirely new paradigms for filling in Chaadayev’s blank space and curing Russia’s predicament of dual peripherality. To be sure, its ambitious projections of transportation, communications, and media legitimized the imperial logic of expansion and control. Just as often, however, science fiction used the same tools for translating Russia’s distance from Western-style modernity into the privileged position of a critical outsider. Through the expanding frontiers of its fantastic environments, the reader in every Russian living room could reimagine the absent nation as a third realm beyond the binary division between
West and East, progress and backwardness. Science fiction thus also became the staging ground for a uniquely Russian third way of seeing, knowing, and inhabiting the world.

**BEYOND EAST AND WEST ON THE TRACKS OF MODERNITY**

**SCIENCE FICTION GOES TO SIBERIA**

Among Russia’s many imperial peripheries, Siberia occupied an especially complicated place in imaginations of the nation. No one really knew where Russia ended and Siberia began. Unlike the Crimean peninsula or the mountainous Caucasus, Siberia’s flat expanses offered no prominent topographical boundaries separating it from the metropolitan centers of St. Petersburg and Moscow. A particularly complex dynamic of territorial expansion, whose history predates the inception of the modern concepts of nation and empire, had shaped Siberia over the ages. Haunted by memories of Mongol invaders who occupied twelfth-century Kievan Rus’ and shaped by Russia’s eastward expansion since Ivan the Terrible’s reign in the sixteenth century, it represented a unique geographical other which could have already infected the body politic with alien Oriental elements and infused its soul with the nomad’s inherent violence. In both geographical and historical terms, therefore, Siberia lurked behind the very idea of the nation, playing the role of an uncanny alter ego that perpetually threatened to undermine Russia’s efforts to be recognized on the world stage. It is no wonder that Chaadayev’s nihilistic portrait depicted the steppe but one step away from engulfing Petersburg’s fragile patina of civilization.

As if to stave off this very threat, nineteenth-century geographers constructed elaborate models of naturalized barriers between European Russia and the vast steppe that stretched eastwards from it. While some textbooks argued that Siberia lay across a continental divide formed by the low-lying Ural range, others emphasized the ecological differences between the forest and the grassland, or maritime St. Petersburg and the isolated, landlocked plains of the East. Bassin notes that these scientific models soon metamorphosed into elaborate theories of historical and cultural distinction between European Russia and its Asiatic margins. Even for representatives of the influential Slavophile movement, who developed the first non-Eurocentric para-
digms of the nation by pointing out the spiritual differences between Orthodox belief and Western Christianity, Russia remained confined to the western side of the Urals.\textsuperscript{11}

The impulse of consciously distancing the nation from Siberia no doubt contributed to its conspicuous absence from the foundational texts of Russian literature, which were replete with images of imperial territories in the South such as the Crimea and the Caucasus. Its exclusion from the literary canon, as Yuri Slezkine suggests, could also be attributed to aesthetic reasons. “In the age of Byronic ‘dread and splendor,’” argues Slezkine, the flat steppe and arid tundra simply “could not compete with the glorious peaks, lush valleys, and mutinous streams of the Caucasus.”\textsuperscript{12} A much more concrete explanation, however, can be found for Siberia’s peculiar status as a negative space in the national imagination: the lack of physical access to its vast, inhospitable territories.

This hypothesis is borne out by the fact that long before the emergence of a national idea, the strategic location and natural resources of Siberia had already marked it out as an object of imperial desire. As early as the 1580s, Ivan the Terrible engaged the services of the Cossack pirate Ermak Timofeevich to extract revenue from the old Sibir’ (Siberian) Khanate as well as recalcitrant steppe tribes such as the Burjats and the Kazakhs. In the eighteenth century, Catherine the Great called it “our India, Mexico, or Peru.” Colonizing Siberia in the proper sense of the word, however, proved impossible due to the utter lack of infrastructure. In an illuminating history of the Trans-Siberian Railroad, Steven Marks observes that even though by the mid-nineteenth century Russia had technically annexed an area larger than Europe, the legendary resources of Siberia could not be accessed in an economically viable way. As a result, its vast expanses remained a terra incognita for most metropolitan Russians. Even policy makers charged with administering the region could not form a proper mental picture of it.\textsuperscript{13} Until late in the nineteenth century, “while educated persons despised Siberia,” the only people who ventured into its heartland were those exiled or escaping from the institutions of European Russia: convicts, Old Believers, and serfs “who had nowhere else to go.”\textsuperscript{14}

But the technology that became the most potent symbol of modernity around the globe transformed Siberia into a rich field of reimag-
ining the nation. Long before the actual construction of the Trans-Siberian Railroad between 1892 and 1905, a remarkably early work of science fiction outlined how a physical artery between St. Petersburg and the Far East could relocate Russia from the margins of Europe to the center of the world. In the preface of the novella “The Year 4338” (1838 god), composed between 1838 and 1864, Prince Vladimir Odoevsky declared: “Railways, invented from the random discovery of steam issuing from a teapot,” have “in my own lifetime completely changed the forms of social life.”  

Starting in 1836, Russia had begun to build a national railway system, which expanded from a small passenger train between Petersburg and Pavlovsk to a large network connecting the capital city not only to Moscow but also to Western Europe through Warsaw and Vienna. The idea of building railroads in Russia apparently came from a Viennese engineer, who convinced Tsar Nicholas I that this new form of transportation would supersede Peter the Great’s legendary achievement of opening a window to the West.

In Odoevsky’s fictional world, however, there are no traces of the trains that were supposed to be the latest incarnations of Peter’s ships. Instead, an “electrical railroad” runs from Peking to St. Petersburg via tunnels under the Himalayas and the Caspian Sea, which a Chinese man traveling on the train calls “the greatest technological achievement of our time” (419). This railway track provides the physical and epistemological foundation for conceiving an astonishing new picture of the world. In the year 4338, the epicenters of Western modernity have given way to depletion and degeneration. A bankrupt Britain, no longer the Empire of the Eternal Sun, has given up most of its territories to Russia, while Germany and France have disappeared from the world map altogether (448). While the formerly great powers of Europe do not seem to be connected to Russia by any transportation system, China has evolved into an appreciative subordinate force. The railroad, the narrator maintains, serves as “the lifeline through which a great past civilization pays homage to the newest power in the world” (422).

The absence of the railroads that connected Russia to the West is all the more noticeable because no other technology encompassed the meaning of modernity more comprehensively in Odoevsky’s time. As Wolfgang Schivelbusch demonstrates in his classic study of the railways, trains not only “industrialized space and time,” but also
evolved into symbolic repositories of abstract values such as rationality, democracy, and progress. In Russia, railroads rapidly became the central metaphor of an epic ideological clash between conservative nationalists and cosmopolitan Westernizers, or “the troika and the train” as Stephen Baehr puts it. Whereas “railroads became a symbol of progress, of social and therefore class mobility” for the liberal intelligentsia and revolutionary students, Leo Tolstoy—whose heroine Anna Karenina would famously follow the “iron path” to suicide by throwing herself under a train—wrote in 1857: “The railroad has the same relationship to travel as a brothel does to love; just as convenient but just as inhumanely mechanical.” Odoevsky could not have been unaware of the immense controversies that erupted in Russia around the building of the national railway. Instead of participating in the debate, however, the author of 4338 appropriated and literally redirected the track. Far from bringing Russia closer to Western Europe, his science fictional electric railroad heads toward the very East from which the nation had tried for so long to distance itself.

An unusually bold authorial claim frames the railroad’s novel trajectory backward to the future. In the preface to 4338, Odoevsky contended that his work of literary imagination would someday be as valuable as Herodotus’s contribution to history (418). He also identified the French naturalist Georges Cuvier as the primary inspiration for the unusual picture of the world presented in it. Unlike his famous contemporary Lamarck, Cuvier did not believe in the transformative powers of evolution. He maintained that organisms are integrated wholes in which each part’s form and function was essential to the entire body and therefore had to remain unchanged. Based on the study of plant fossils, many of which he collected during a stint in Egypt with Napoleon’s army, Cuvier concluded that any changes in an organism’s anatomy had a debilitating effect on the viability of the species as a whole.

Cuvier’s resistance to the very notion of development, expressed through botanical rather than mechanical metaphors, at first seems irreconcilable with the Promethean future outlined in 4338. A key to his influence on Odoevsky, however, may be found in the Russian reception of the first philosophies of history that challenged the Enlightenment ideal of universal progress, such as the notions of national
distinctiveness and authenticity proposed by the German philosopher Johann Gottfried von Herder. In a radical departure from the belief that human thought and activity over nature brought about historical development, Herder asserted that just as various parts of the tree and various life forms in the forest did not encroach on each other, each national and cultural community was unique, irreducible, and immune to transformation: “The old cedar stands full and strong, smiling at the new shoots springing up from the earth.”20 Europe, rather than embodying the pinnacle of progress, represented for Herder “the thinnest twigs shaking at the top,” which would not survive without their organic connection with the roots and stems of less developed cultures. Herder asserted that it was absurd to think that the destiny of all nations would follow that “thin strip of the earth’s ball” created by the “machine of cold northern European abstraction.”21

Odoevsky, one of the earliest thinkers to embrace Herder’s notions of authenticity and self-sufficiency, founded an intellectual circle called the Society for the Lovers of Wisdom to study his work alongside other post-Enlightenment philosophers.22 He suggested that Herder’s dismal image of Western civilization could only be reinvigorated with an infusion of “organic force” from the “roots”—that is, from nations such as Russia, which were connected with Europe but distinct from it. As part of the universal whole and at the same time an “organism composed of elements forged by the ages,” Russia was uniquely equipped to transcend the duality of East and West and carve out its own historical trajectory.23

The train running between Peking and Petersburg in 4338 accomplishes precisely this task. By severing Russia’s physical ties with the West, it also saves the nation from the catastrophic degeneration that would befall England, France, and Germany. Even more remarkably, Odoevsky’s science fiction changed the signification of the very technology that it appropriated. Rather than serving as a window to the West, the railroad establishes an organic link with the non-Slavic, non-Christian Mongol East embodied by the Chinese narrator Tsungiev. By depicting the train as the physical conduit through which Russia would revive its repressed Oriental genealogy, 4338 constructed a new trans-Asiatic economy of space that was conceptually very close to Cuvier and Herder’s botanical ecosystems.
Odoevsky’s novel picture of the world also signaled the emergence of a new relationship with modernity in which Siberia would play an increasingly important role. His subversive portrait of Russia’s regeneration from the East acquired a far more radical cast in the late nineteenth century through the work of second-generation Slavophiles, who eschewed the spiritual paradigm of their predecessors and adopted secular, scientific methods for separating Russia’s geography and history from the West. The most prominent representative of this movement was Nikolai Danilevsky. His monumental work of 1869, *Russia and Europe: A View of the Cultural and Political Relations of the Slavic World to the Germano-Romanic World* (*Rossiia i Evropa. Vzgliad na kul’turnye i politicheskie otnosheniia slavianskogo mira k germano-romanskuiomu*), became a tremendously influential text for decades to come. Danilevsky’s extensive academic interests in mathematics, biology, and paleontology infused his discourse with an unprecedented degree of analytical rigor at the precise time when speculative and romantic approaches to science were being replaced with sample collection and data analysis. Danilevsky was also one of the earliest members of the newly founded Russian Geographical Society. This last affiliation was particularly significant, because it funded the expeditions to Siberia from which he gathered geological, botanical, and anthropological data to support his theories. The Geographical Society also provided him with an invaluable collaborator called Peter Petrovich Semenov. Semenov subsequently became famous as “Tien-Shansky,” the conqueror of the Tien Shan mountain range in Central Asia, and contributed more than any other single figure to the exploration, documentation, and dissemination of knowledge about Siberia.²⁴

Like Odoevsky, Danilevsky turned to Cuvier’s comparative study of ground plants for elaborating his model of national distinction. He emphasized that whereas in previous studies of nature lichens, ferns, and moss were considered to be mere appendices to the more majestic forms of plant life, for Cuvier each cryptogam had its distinct place and played an important role in the environment. Danilevsky used this analogy to repudiate the very concept of development as a progression from the West to the rest of the world. Instead, he laid out an alternative model of space and time based on the “natural system of morpho-
logical taxonomy,” in which political and social organisms are classified into discrete “national-historical types.”

Maintaining that the “civilization of one cultural-historical type could not be transmitted to the people of another type,” Danilevsky characterized Russia’s obsession with Western modernity as a malignant “infection” and compared the futile attempts of modernizing Russian life with the process of plant grafting. According to Danilevsky, Russia was like a host organism whose essential characteristics had been destroyed by the alien elements forced into its body. Its fruits, consequently, would be imperfect clones of the parasitic graft under the best of circumstances (201). How to combat this process of self-destruction provides the subject of the eleventh chapter of *Russia and Europe*, titled “Mimicking Europeans.” Danilevsky prescribed that the only way to regenerate Russia’s depleted essence and reclaim the original strength of its authentic identity was to turn to the very East that nationalists had traditionally shunned. The prehistoric nomadic force of the steppe contained the only cure for the malaise of marginalization and backwardness. In what seems to be a radically poststructuralist strategy from our perspective, Danilevsky used the data collected from his Siberian expeditions to debunk the dominant ecological models of the time that separated metropolitan Russia from its Asiatic margins. The conjoined landmass of Europe and Asia, he argued, came to be perceived as two distinct continents not because of natural reasons but out of arbitrary human criteria (326–30).

Danilevsky’s unique synthesis of science and Slavophilism set the foundation for a new map that would eventually break Russia’s tenuous link with Europe and identify the nation wholly with Asia. The philosopher Konstantin Leont’ev, for example, militantly extended Danilevsky’s thesis to predict: “Something *spiritually* [emphasis in text] independent from Europe can be generated only by that Slav nation which among all of them is the most Eastern, the most, so to speak, Asiatic. Without this Asiatic influence transmitted through Russia all the other Slavs would at best rapidly turn into the worst Europeans of Europe.”

In the last two decades of the nineteenth century, the idea began to emerge that steam power held the key to closing the gap between
metropolitan Russia and its Asiatic frontiers. Ironically, by this time the most promising means for conjoining the nation with its estranged other half had also become universally recognizable as the most effective tool for building and maintaining empires. Marks documents the great fascination with which both the Russian media and Russian policy makers followed the establishment of railways in the British Empire and the construction of transcontinental lines across North America in the 1860s and 1870s. K. P. Pobedonostsev, Tsar Alexander III’s minister of foreign affairs, declared that “to command railroads in the East is to practically preside over the whole of Asia.” A constellation of economic and political developments, including famines in the Russian countryside, the discovery of gold in Siberia, and the empire’s growing influence in the North Pacific, helped the finance minister, Sergei Witte, to push forward the proposal of building a track connecting St. Petersburg to Vladivostok.27

The very notion of such a railway line was enough to generate an unusual projection of its potentials by the most remarkable literary intellect of the late nineteenth century. A decade before construction began on the Trans-Siberian Railroad, Fedor Dostoevsky declared that it would end Russia’s humiliating history of seeking validation from Europe. In a manifesto titled “Geok Tepe: What Is Asia to Us?” (“Geok Tepe: Chto takoe dlia nas Aziia?”), published the day after his death in 1881, Dostoevsky issued the call: “Build only two railroads, one to Siberia and the other to Central Asia . . . and Asia would be Russia’s salvation.”28 This unambiguous espousal of railways seems particularly incongruent against the author’s well-documented antipathy toward Western modernity in general and technology in particular. Dostoevsky’s fear and loathing of the trains on which he himself traveled many times between Russia and Europe generated the complex apocalyptic imagery of his famous novel The Idiot, published in 1869, in which the iron horse of the steam engine merges with the dark horse of Armageddon and railway tracks become pipelines for “poisoning the waters of Russian life.”29 According to David Bethea, railways provided Dostoevsky with a tremendously generative space for staging the dialectics between messianic and historical, spiritual and secular, Russian and Western concepts of time.30

“Geok Tepe” demonstrates, however, that a railroad toward the East
elicited a diametrically opposite reaction from the celebrated writer of *The Idiot*. Dostoevsky himself confessed on its pages that his readers “will be shocked at my sudden embracement of science and technology, and especially the technology of the railway” (1043). But this polemical essay, which is frequently cited but rarely analyzed in the considerable body of scholarship on Dostoevsky and the railways, reveals that the Siberian line offered the author an unprecedented epistemic armature for imagining a positive spatial history for the nation. Whereas Westward-bound trains represented a fatal pollution of the Russian idea, tracks heading in the opposite direction would simultaneously recover the lost roots of Russian identity and revitalize its prospects for the future.

Once linked to the heart of the nation, Dostoevsky argued, Siberia’s “primitiveness and nomadic barbarism” (1044) would serve as a strong but necessary antidote to the debilitating poison of Europeanization. Unifying the Oriental and European aspects of Russia’s legendary Janus-face was, in his opinion, the vital first step in ending the nation’s two-centuries-long struggle for legitimacy: “Because Russia is not only in Europe but also in Asia; because the Russian is not only a European but also an Asiatic . . . we must banish the slavish fear that Europe will call us Asiatic barbarians, and that it will be said that we are more Asiatics than Europeans” (1047).

The author’s bold vision of Asianizing Russia, however, loses much of its ideological force when juxtaposed with the second half of the essay, titled “Questions and Answers,” which described the material benefits of Witte’s brainchild. Dostoevsky identified corn and gold, the two commodities associated with Siberia that tilted the scale of public opinion in favor of building the railroad, as magic products that would fuel Russia’s future economy and ensure its preeminence over rival Western empires. Exploiting the resources of Siberia, he asserted, would finally compel “Mother Europe” to recognize Russia as a legitimate child (1049). Along with the historical occasion that turned Dostoevsky’s gaze toward Asia—the victory of General Skobolev over the Turkmen town of the Geok Tepe in 1880, which resulted in the massacre of eight to fifteen thousand locals—this ultimate quest for validation from the West thoroughly undermines the project of reclaiming an Asiatic identity via the projected railroad.
The author resolved the rhetorical and ethical inconsistencies between the two sections of “Geok Tepe” by resorting to Danilevsky, whom he credited with “express[ing] my own ideas with a degree of scientific method that I would never be able to realize.” Appropriating the botanical analogies with which Danilevsky, via Cuvier, had repudiated Russia’s dependence on Europe, Dostoevsky proposed a similar alteration in the relationship between Siberia and the nation’s body politic. He represented the East as a species of ground plant that was previously ignored as “a mere appendix” to the fabled forests of European Russia. In order to revive the “sick roots” of this forest and “render the plant organism [of the nation] whole” (1044–45), it was vital to reconnect the tall tree with the low-lying plant forms that proliferated across the steppe and supplied it with nutrition. This Herderian reversal of dominant ecological models generates another astonishing metaphorical leap. Instead of envisioning the railroad as an arrow shooting from European Russia’s seats of power toward the primitive imperial frontier, “Geok Tepe” depicts it as a lower form of plant life proliferating in a network “across the naked palm of Russia” (1045). As the Trans-Siberian Railroad metamorphoses from a machine of conquest into an integral component of the Russian-Siberian ecosystem, it also transforms Chaadayev’s blank space into a Euro-Asiatic tabula rasa ripe for utopian speculation.

Dostoevsky’s proposal may have been a figment of a visionary writer’s imagination, but a treatise from 1892 demonstrates that the idea of a train across Siberia may have inspired professional geographers in remarkably similar ways. In the year when construction began on the Great Siberian Railroad, Vladimir Lamansky, an accomplished anthropologist and linguist who mentored Danilevsky’s colleague Semenov at the Geographical Society, advanced a radical theory in a treatise titled The Three Worlds of Asiatic-European Foundations (Tri mira Aziskogo-Europeiskogo materika). Lamansky took the notion of organically extending Russia, central to both Danilevsky and Dostoevsky’s pictures of the world, to its logical conclusion. He declared that the territories beyond the Urals were historically as much a “homeland and fatherland” for Russians as European Russia, a claim that no European could make about their colonies. Instead of “Europe or Asia proper,” Lamansky’s Russia “lay in a third space that belongs to the
tion and yet is excluded from it.” This inchoate space, needless to say, corresponded exactly with Siberia.\textsuperscript{32}

While science fictional projections of the Trans-Siberian Railroad anticipated and perhaps influenced Lamansky’s revisionist cartography, the emergence of the railroad from idea to reality over the next decade added a significant temporal dimension to the third space in which he proposed to relocate Russia. As the track progressed farther into the Siberian heartland, a veritable flood of reportage kept readers in European Russia up to date about the ever-expanding potentials that opened up with each new section of the line. By 1900, when all but the last piece between Chita and Vladivostok had been completed, innumerable features about Siberia dominated not only the scientific illustrated magazines, but also every other periodical.

A survey of the ways in which Siberia evolved from negative space to a living field of knowledge yields a fascinating picture. While many Russian journalists predictably rhapsodized about its natural resources and geopolitical significance, a surprisingly large number of articles focused on an unexpected, qualitatively different aspect of the territories newly conquered by the tracks of modernity: a virgin landscape teeming with previously unknown varieties of organic life. Rushing past the windows of the train, Siberia was the only place in the world to offer an unlimited view of the deep past preceding human history and the Promethean promises of a technological future.

Far from being antithetical, the two perspectives on a land beyond time actually supplemented and reinforced each other. Their symbiotic relationship is evident from a constellation of articles published in the popular press over 1900, the same year in which the Russian government, in spite of the fact that the Railroad had not technically been completed, released a trilingual Russian-English-French guidebook at the Paris World Exposition.\textsuperscript{33} A feature titled “The World Railway” (“Mirovaia zheleznaia doroga”) in The Field literally constructed a new picture of the world based on the premise that the railway line would continue to proliferate toward the East. The imaginary account of such a journey was accompanied by a remarkable illustration, which showed a radically reconfigured map of the world. The picture accompanying the article seems to correspond at first with Odoevsky and Dostoevsky’s literary projections, which depicted the railroad stretching
all the way to China and eventually culminating in the Pacific. Closer examination, however, reveals a fundamental difference in both the trajectory and the objective of the train in 1900. Forced by its relentless eastward advance, the narrator and mapmaker’s eye leave behind not just the West but also Asia. Along with the railway track, the label “Russia” continues to stretch across the Pacific, connecting Siberia through the Bering Strait all the way to North America. The train transports Russia itself into a mobile, ever-expanding East that eventually merges back with the West and encompasses the entire globe. It also restores the geological bridge that long ago connected Asia to North America, conjoining the prehistoric steppe with the pinnacle of Western civilization in the twentieth century.

The temporal counterpart of this science fictional strategy may be found in a series of articles published in *Nature and People* the same year under the provocative title “The New Past” (“Novoe proshloie”). Focusing on the treasure house that the Trans-Siberian Railroad had opened up for the emerging fields of geology and paleontology, they enumerate the extraordinary insights the region could provide toward reconstructing the world before humans came on the scene. Whether narrated from the perspective of explorers in Siberia or journalists based in European Russia, the accounts repeatedly emphasized the location of the discoveries. While “Europeans had to go searching all over the world for a key to the past,” a reporter exclaimed, “Russia has to look no farther than its own backyard.” “A field that rivals Cuvier’s Egypt,” thanks to the Railroad, could now be counted as a bona fide part of the nation. Another article celebrated the geographical span of the Trans-Siberian line, straddling St. Petersburg and the Pacific, as a metaphor of the nation acquiring “a new future through a new past.”

The correlation between the spatial and temporal potentials attributed to the new railroad demonstrates how its material existence transformed and transcended the nineteenth-century paradigms of reunifying European and Asiatic Russia. While the end of the line in Vladivostok opened up a new Eastern perspective from which Russia, traveling on the “world railway,” comes to occupy the whole surface of the globe, the diversity of past and present life revealed along the tracks, “as rich as Cuvier’s field,” presented a novel way to liberate
the nation from the shackles of human history in which the West had always occupied a privileged position.

The reference to Cuvier, in fact, illuminates how physical access to Siberia provided by the actual train resolved the fundamental contradictions of its extrapolative portraits produced in the nineteenth century. In spite of repudiating Eurocentric models of nationhood and lauding the revitalizing powers of the East, neither Odoevsky nor Dostoeyevsky could envision anything but European Russia as the railroad’s origin and ultimate destination. Like Danilevsky, their geopolitical fantasies relied on Cuvier’s model yet failed to extend it beyond the existing conventions of cartography and historiography. In contrast, the post-Danilevsky generation, traveling on the train across Siberia, was able to abandon both the limitations of a terrestrial perspective and the short span of human history. Just as the Trans-Siberian connected Russia’s metropolitan centers with their most primitive geographical other, it subverted the very concept of modernity by putting technology on the same timetable as geology and paleontology. The result, as evident from the media, was electrifying. As the Trans-Siberian Railroad hurtled toward the East, it took the nation along on a journey that encompassed the entirety of natural and human life.

No variety of realist prose, however utopian or apocalyptic, could accommodate the radical expansion of space and time brought about by the new technological artery between Europe and Asia. The Trans-Siberian Railroad thus generated a cognitive and formal revolution of its own in the twentieth-century literary imagination. This revolution manifested itself not only in new ways of envisioning the nation and its subjects, but also in an unprecedented conjuncture between three modes of representation that were uniquely capable of leaping through great expanses of space and encapsulating unimaginable spans of time: science fiction, lyric poetry, and cinema. Two elaborate literary treatments of the Trans-Siberian from the 1920s demonstrate how the railroad provided a unique chronotope for these seemingly incommensurable genres and media to animate each other. The Futurist poet Velimir Khlebnikov’s “The Tree,” composed in 1921, and the Bolshevik leader Alexei Gastev’s “Express,” published in 1924, exemplify the synthesis of science fiction with the lyric and cinematic imaginations. In
spite of their chronological proximity, however, the two works advance diametrically opposite ideas of where the train would take Russia in the wake of the October Revolution of 1917.

“The Tree” begins with a deceptively conventional description, “Along the steel fabric that rolls from Moscow to Vladivostok / Siberia, you move like gray night’s whistle through the blue,” but culminates on the Pacific with the train’s transfiguration into “a bird, its beak wide open against the blue sky.”\(^36\) Between the two extremities of machine and animal, corresponding with the railroad’s origin and destination, stretches the bulk of the poem—an extended, multidimensional figuration of the Trans-Siberian as a unique form of plant life. While the unusual botanical conceit reveals Khlebnikov’s indebtedness to the scientific and science fictional imagination of the late nineteenth century, it also encodes how the poet transcended the vision of his intellectual predecessors.

Unlike Odoevsky, Danilevsky, Dostoevsky, or Lamansky, Khlebnikov and his contemporaries were painfully aware that the real Trans-Siberian Railroad had failed to shape a glorious destiny for Russia even before its completion. Although the war with Japan, triggered by an attack on the Russian fortification of Port Arthur on the Pacific in 1904, prompted the imperial government to finish the Chita-Vladivostok section in a hurry, troops transported to the Far East on the train could not prevent Russia’s final, humiliating defeat in the naval battle of Tsushima. By 1905, therefore, the Trans-Siberian came to be associated with twin cataclysms at its origin and endpoint: the failed first revolution in St. Petersburg, and the bloody denouement of the war with an emerging Asiatic power.

Khlebnikov, who called Tsushima the turning point for his transformation from a poet to a philosopher of history and who actually rode on the Trans-Siberian with a Red Army contingent after the October Revolution, represents the journey into Siberia through a remarkable series of metamorphoses.\(^37\) In the first leg, the pinnacle of modern technology devolves into a primitive “club of war” carved from the legendary oak trees of European Russia (110). As I have argued elsewhere, this initial transposition of iron with wood captures the immeasurably long history of violence that marked Russia’s presence in Siberia from Ivan the Terrible’s time until the Russo-Japanese and revolutionary wars of
the twentieth century. Very soon, however, the train leaves the limited
domain of human history. The oaken club breaks down into precisely
the kind of lower plant life that Cuvier’s Russian admirers had valo-
rized in the nineteenth century, and begins to mimic the rhizomatic
proliferation of bushes and grasses native to the steppe that Dosto-
evsky eloquently invoked in “Geok Tepe.” Both Siberia and the railroad
ultimately “scatter into shards/ like mirrors hanging from branches”
(111).38

The regression and dissolution of the very technology that was sup-
posed to assimilate primitive Siberia into the civilized body of Euro-
pean Russia provides an iconic example of the original ways in which
Khlebnikov appropriated and subverted not only nineteenth-century
extrapolations of the Trans-Siberian Railroad but also the popular en-
thusiasm about Siberia at the turn of the twentieth century. Instead of
filling in the nation’s blank space and lack of history with the wealth of
its organic prehistoric past, the land beyond time in “The Tree” reaches
back and breaks down European Russia’s mightiest instrument of
empire.

An explicitly science fictional leap at the mid-point of the poem
translates Khlebnikov’s fluid transitions between mechanical and
organic tropes into a much more profound agenda. Deep within the
Siberian heartland, the “two-faced city” of the train suddenly takes off
from the two-dimensional plane of the map, “plunging into the sky
like fishes . . . to seek Lobachevskian space” (111). Nikolai Lobachev-
sky, a nineteenth-century mathematician, is credited with anticipating
Albert Einstein’s general theory of relativity.39 The thesis with which
Lobachevsky changed scientific perceptions of space and time chal-
lenged the Euclidean axiom that two parallel lines never meet. By dem-
onstrating that this principle was valid only if the lines were projected
along a straight plane, Lobachevsky concluded that on a curved plane,
such as Earth’s surface, the parallel lines would merge in a fourth di-
mension. Railway tracks, not coincidentally, incarnate the classic Eu-
clidean geometric parallel. By invoking Lobachevsky at the precise
moment when the train flies off the track, Khlebnikov ascribed a new
function to the Trans-Siberian Railroad. From an instrument of con-
quering space, it metamorphoses into a tree of time.

This transition from space to time is vital for understanding how
the train-tree overcomes the persistent imperial logic that undermines even the most ambitious nineteenth-century projects of catapulting Russia into a third space beyond East and West. For Khlebnikov, envisaging a third space for Russia’s future was not enough. As he declared in an early manifesto titled “The Trumpet of the Martians” (“Truba marsian”), the geopolitical paradigm of “states of space,” no matter how they were reconfigured, ended up perpetuating the oppression and conflict that plagued modern societies. Instead, he called upon a new community of “Martians”—Futurists inspired by H. G. Wells’s *The Time Machine*, which like Lobachevsky’s mathematics anticipated general relativity—to “enter an independent state of pure time.”

What a liberated state of pure time would look like is also depicted through a remarkable fusion of science fiction with the political genre of the revolutionary manifesto. Two documents from 1918, which Khlebnikov titled “Indo-Russian Union” (“Indo-russki soyuz”) and “Asiaunion” (“Azosoyuz”), take the Lobachevskian train as a point of departure for envisioning a radical new cartography of the future. Dispersing into a hundred rhizomatic branches, the Siberian line in these manifestos unifies not just Russia’s estranged halves but also its Eastern periphery with Europe’s colonies in “India, Afghanistan, the Suez, and Malacca.” Instead of revitalizing Russia’s civilizational core as nineteenth-century visionaries had speculated, Khlebnikov’s railroad embodied an unprecedented organic network between multiple disenfranchised margins of the modern world. By connecting pockets of “enslaved Asiatic states” ruled by “islands of European oppressors” (342), it would evolve into the technological as well as conceptual backbone of a new global entity called “The Continent of ASSU (China, India, Persia, Russia, Siam, Afghanistan),” (342). On this new world railway, citizens of the union would receive “free passage from the Yellow Sea to the Baltic, from the White Sea to the Indian Ocean, without ever encountering a frontier” (342).

Whereas Khlebnikov employed the Trans-Siberian Railroad for aligning the Bolshevik revolution with a global vision of postcolonial modernity, a completely different portrait of a socialist future emerges from the science fiction narrative “Express.” Alexei Gastev, who became a legendary ideologue of the Proletarian Culture movement that sought to remake the former subjects of the Russian empire into emis-
saries of an exemplary revolutionary collective, straightened out the
convoluted pathways of Khlebnikov’s tree to present an unabashedly
spectacular account of revolutionary Russia’s triumphal march across
the face of the Earth.

While Khlebnikov transformed the older form of the lyric with sci-
ence fictional interpolations, Gastev presented his science fiction
through the exciting new medium of cinema. “A gigantic projector
about to flood the earth and the sky with its blinding rays” broadcasts
the path carved out by the steel tracks in “Express.”42 Editorial cutting
and altering camera speed, which constituted cinema’s inimitable way
of compressing space and time, provided Gastev with a unique set of
techniques for narrating his version of a journey on the Trans-Siberian.
Its itinerary proceeds in episodic jumps, bridging vast distances and
immeasurable temporal disjunctures between the stops along the line.

The starting point of the train, whose name “Panorama” also in-
vokes the movie screen, is a town called Kurgan “just beyond the east-
ern slope of the Urals.”

Kurgan—populated by a proud, free Siberian tribe that has never
known a feudal or capitalistic order—is surrounded by railway
tracks. [...] Today, Kurgan produces the most important commodity
of all. Its famous landmark is the “House of the People,” from which
knowledge is distributed all over the world. (136–37)

Kurgan distills the essence of Siberia’s twentieth-century perception
as a land beyond time, a space where the prehistoric past merged with
the Promethean future without being tainted by modernity. Named
after the kurgans, or burial mounds, of early humans who roamed
across Eurasia, it exists in a time warp that has skipped history to arrive
straight into the future. Its inhabitants, accordingly, have morphed di-
rectly from a primitive egalitarian tribe into an ideal collective of New
Soviet People. This remarkable way of subverting Chaadayev’s trope of
blank space only serves to underscore the complete absence of Euro-
pean Russia’s metropolitan centers in Gastev’s socialist utopia. Like
England, Germany, and France in Odoevsky’s 4338, St. Petersburg and
Moscow have disappeared from the map, leaving “the steppe to be-
come the habitat of the whole world” (137).

Kurgan represents the core of a globe in which the train has trans-
lated Siberia’s temporal depths into the material environment of socialist production. Starting from Kurgan, which is both the beginning and the end of the line, the train reveals one city after another dedicated to a particular sector: agriculture; metallurgy; heavy industry; transportation; communications (including the futuristic “tele-cinema,” 144); “floating platforms” (146), which can only be interpreted as oil rigs; and last but not least, knowledge. Information is the greatest resource of the self-sufficient political ecology that Siberia represents in Gastev’s futuristic world. In an astonishing prediction of the post-manufacturing knowledge economy that defines our age of globalization, Gastev envisioned Kurgan and its sister cities as pioneers of a seemingly incommensurable combination between socialism and profit making. Siberia’s primary export is “information produced in Kurgan [and] marketed all over Europe and America.” (141).

Gastev’s science fiction also offers a unique response to fin-de-siècle predictions about the decline of the modern West that made their way to Russia. In contrast with Herder’s vision of peaceful coexistence, thinkers such as Friedrich Nietzsche, who makes a brief appearance in Khlebnikov’s “Tree”; Max Nordau, whose psycho-sociology of Degeneration took Russia by storm in 1896; and Oswald Spengler, whose famous Decline of the West from 1913 had been profoundly influenced by Dostoevsky, foresaw a violent overturning of European civilization in the hands of emerging powers from the East. The Trans-Siberian Railroad offered a novel paradigm for imagining the world after these predictions have come true. Even though the futuristic express train epitomized the Bolshevik dream of technological hypermodernization, the track starting and ending in Kurgan demarcated a quarantine zone that isolated the nation completely from the European germ of degeneration and decline. By conflating a postcapitalist world system with Siberia’s timeless natural habitat, Gastev replaced the obsolete notion of national civilizations with a Chinese box—or Matryoshka doll—of nesting economic and ecological enclosures.

Although Gastev’s science fiction was remarkably innovative in ideology and form, the picture of the world represented in it was not completely new. The idea of inoculating the nation by transforming Siberia into a composite alternative habitat occupied a prominent place in the
science fictional imagination of Nikolai Fedorov, a millenarian philosopher who knew Danilevsky and Dostoevsky but also exerted tremendous influence on several generations of twentieth-century writers and artists. In the monumental *Philosophy of the Common Task* (*Filosofiia obshchego dela*), a collection of treatises penned between 1887 and his death in 1903, Fedorov frequently alluded to the emerging significance of Siberia. As a simultaneous repository of the deep past and the unlimited future, Russia’s eastern extension became a crucial node for synthesizing the two parts of his ambitious practical philosophy: restoring the lost links of humanity’s common origins and creating a harmonious future of fraternal love. Siberia’s wealth of natural history contained the key to the first objective. Just as the frozen tundra had yielded up fragments of ancient plant and animal life, Fedorov speculated that it also contained the remains of the first human to ever inhabit the Earth. Michael Hagemeister, who has written extensively about the Fedorov cult in twentieth-century literature and art, notes that his followers embarked on expeditions to find this elusive relic well into the 1920s. Recovering it was crucial because the next step in the “common task” involved the resurrection of all dead ancestors of humanity.

Siberia’s limitless expanses, transformed into verdant farmland thanks to the advent of technology via the Trans-Siberian Railroad, also served as the projected field for realizing the second part of Fedorov’s plan. Like the inhabitants of Gastev’s Kurgan, the countless generations reunited by resurrection would live together in egalitarian collectives and “toil in the fields by day and in factories at night.” As an unprecedented site of harmony between nature, humans, and machines, this portrait of Siberia’s future also contained the cure for what Fedorov thought was the biggest crisis of modernity. In an astonishingly contemporary idiom, he claimed that the Enlightenment had pitted humans against nature and locked them in an irrevocably antagonistic relationship. Their perpetual war had reduced technology, the greatest product of the intellect, to a mere “prosthesis of modern life” (1: 89). The Trans-Siberian Railroad signaled a new era for Fedorov in which the instruments of modernity would not only restore humankind’s lost connection with nature, but also bring forth, in Khlebni-
kov’s words, a “state of time” founded on the principles of universal brotherhood. In the process, technology itself would evolve into a vital component of subject formation.

FROM AIR DRAMAS TO MYSTICAL WARS
THE ASCENDING PLANE OF SCIENCE FICTION

Siberia, “which shaped the rebellious personalities of Cossacks, sectarians, and Old Believers” (1: 390), also inspired Fedorov to identify the most suitable mechanical means for transporting humanity to an unprecedented state of harmony with both nature and technology. “Aeronautics,” as he called it, was an emerging mode of conquering space whose contours were uniquely compatible with “Russia’s open horizons in the East” (1: 390). In contrast with Chaadayev’s negative image of the steppe engulfing the nation, Fedorov believed that “Our lack of territorial identity provides the ideal platform for moving from the confines of earthly space into the open sky” (1: 390).

Fedorov valorized airplanes not for their mechanical potentials but because aviation was an unprecedented form of uniting the machine with the human in the formidable isolation of the open sky. In keeping with this view, the philosopher exhorted the audience of “aeronautical exhibitions” to stop being passive consumers of the spectacle and actively participate in the unfolding saga of “breaking into ever greater heights” (1: 391). He cautioned his readers, however, against a particular danger of viewing the Earth from the great height of the airplane: “The same machine that liberates the consciousness from narrow confines of the ego can also sharpen the distinctions between fellow human beings” (1: 391). Fedorov’s warning, issued long before the Wright Brothers’ first flight in 1906, could have been uttered a decade later by Bert Smallways, the protagonist of H. G. Wells’s famous War in the Air. Wells’s science fiction novel, which was published in 1908 and translated into Russian in 1909, anticipated the traumatic experiences of fighter pilots in the First World War with terrifying accuracy.

Fedorov’s futuristic disquisition on aeronautics, followed by his protégé Tsiolkovsky’s legendary obsession with vehicles that defied gravity, demonstrates that long before the first Russian pilot undertook a public flight in 1909, there existed a distinctly science fictional sensibility of what the historian Scott Palmer calls “Russian air-
mindedness.” Highlighting the unique “iconic” function of aviation in Russia between 1909 and the Great Patriotic War, Palmer argues that like Orthodox Christian devotional pictures, airplanes performed the double role of “simultaneously represent[ing] a symbol of sought-after modernity and the material means to that end.” Thus aviation provided “the most promising means for transcending the nation’s ‘backwardness’ in a single technological leap.”

This trenchant observation, however, presupposes that the desire for technological modernization was synonymous with nationalistic fervor while eliding the fundamental ambiguity evident from Fedorov’s aeronautical reflections, where the unbridled enthusiasm for flight was deeply tempered by the fear of triggering further conflict between fellow humans. A far more complex dynamic between aviation and the nation can be gleaned from the plethora of speculative narratives that began to appear before the actual inception of flight in Russia, and continued to color the Russian imagination through the First World War. The Orthodox icon, from the perspective of form rather than function, provides a generative point of departure for this analysis as well.

Heaven and Earth defined the two parts of an archetypal separation of space in Orthodox iconography, which in turn drew upon a much older tradition. In narratives from Plato’s *Phaedrus* to the biblical account of Elijah, movement between the two realms signified either a privilege reserved for selected individuals in direct communion with the divine, or else a radical act of transgression against a transcendental order. Elijah, known as *Il’ia prorok* in Russian popular belief, replaced pagan Gods of the heavens such as Perun or Svarog who meted out justice in the form of thunder, lightning, and rain. Apotheosis and insurrection, however, are also separated along two distinct modes of transgressing the boundary between Heaven and Earth. Esoteric ascent, the flight of the spirit, was a sanctified act, as evidenced from the elaborate models of verticality constructed by the Gnostics. In contrast, stories of exoteric or mechanical ascent, such as the Icarus myth, recounted the punishment meted out to defiant mortals who dared to challenge the hierarchical division of space. An anonymous seventeenth-century Russian icon of Elijah’s ascent very clearly distinguishes the sky and Earth with the colors blue and black. The figure of
the prophet is suspended between the two colors while a diminutive group of peasants firmly remain in the lower half of the frame.

A folk narrative, also dating back to the seventeenth century, described in graphic detail the consequences that awaited one of these earthly mortals had he dared to harbor dreams of flying. The “Russian Icarus,” a serf who attempted to take off on artificial wings from his master’s estate, was beheaded not only on the charges of heresy but also because he flouted the bond of the nobleman’s land.47 While Palmer reads the resurrection of this secular icon in the early twentieth century as a celebration of “the backward nation catching up with modernity” (7), science fictional accounts of aviation suggest that the collective destiny of the national community could not be so easily conflated with the figure of the individual physically flouting traditional hierarchies of space.

Far from celebrating the conquest of the heavens, early Russian imaginations of flight echoed the doubts with which Fedorov qualified his observations on aeronautics. *Nature and People* carried a satirical sketch in 1899 titled “Wedding in the Air,” which cited the sinister figuration of flight in Pushkin’s famous story of 1834, “The Queen of Spades” (“Pikovaya dama”). In Pushkin’s work, several crystal spheres commemorating Montgolfier’s first successful balloon flight in 1780 feature prominently among the various paraphernalia of witchcraft arrayed on a countess’s table. Just like Pushkin’s countess, the magazine depicted the Russian elite of the twentieth century flirting with something inherently dangerous in a mad desire to appear modern and Westernized.48 *Around the World* published a series of cartoons, entitled “Airplane Dreams” (“Aeroplannye mechty”), associating exoteric or mechanical ascent with the gross desecration of technology’s immense potentials for serving the community as a whole. The few individuals who experimented with flying appear to be monstrous deviants indulging a dangerous fetish. As the news of faster, sturdier, and more sophisticated flying machines began to flood the press, the media frequently called airmen the “Fausts of the new century” who had made an unforgivable bargain with the devil.49

The combination of fascination and fear with which the Russian media regarded the physical act of flying generated a distinctive subcategory of science fiction. “Air dramas,” serialized in scientific illus-
trated magazines, purported to be first-person accounts of individuals who had taken the daring step of crossing the threshold between the Earth and the sky. Mark Volokhov, a prolific writer of popular science fiction, produced a number of such firsthand records. “Over the Abyss: Tales of an Aviator” ("Nad bezdnoiu. Iz rasskazov vozdukhoplavatel’ia"), published in 1900, recreates the perspective of a fictional anonymous Russian aviator who, long before the Wright brothers, undertakes a journey around the world. Just like the Russian Icarus, the pilot faces punishment for transgressing the archetypal boundaries between Heaven and Earth. As soon as he calls himself “God of the skies” (20), the elements retaliate with a veritable hurricane that almost crushes his fragile craft. What saves him from the fate of the seventeenth-century peasant, however, is a newly found responsive relationship between the human and the machine. In strikingly Fedorovian terms, the pilot describes how “instead of fighting nature with my wings, I flowed with the storm—and soon my plane and I were one with the thunder and the lightning” (22). Death does visit him at the end, but not before he completes the epic last phase of the journey over the Pacific, with “the horizons of Russia just coming into sight” (25). Unlike the Russian Icarus, Volokhov’s airman is granted a rare kind of agency over his own fate. Instead of carrying out an emergency landing on a small island below him, the protagonist refuses to return to Earth at the end of the journey. He prefers to crash his airplane into the ocean—“the mirror image of the limitless sky” (26).

“Over the Abyss” stands out from the scores of air dramas that followed it because it captured exactly how aviation affected Heidegger’s paradigm of modernity. Unlike the Siberian Railroad, the “two-faced city” of Khlebnikov’s poem that transported the collective body of the nation into Lobachevsky’s fourth dimension, the picture of the world generated from the perspective of a lone individual looking down from the heavens seemed to simultaneously exemplify and defy spatial notions of subjectivity. Science fiction mediated this dilemma by privileging the esoteric, mystical aspect of ascent over the material transgression of breaking free from the Earth’s surface and by transforming the “Fausts of the Air” into saints and prophets. In the process, it also transferred the locus of negotiating national identity. Science fiction shifted the effort of defining what Russia is from the physical space
of the sky to the new kind of human that the aviator represented. The Fedorovian synergy between the pilot, his machine, and above all, his unique perspective on the Earth below provided the contours for a new way of becoming a Russian subject in the midst of the world.

Even though the following decade saw the emergence of real Russian airmen, the air drama continued to provide crucial templates for their representation in literature and the media. In a short story titled “The Flight” (“Polet”) published in 1913, Leonid Andreev reimagined the death of Yuri Pushkarev, whose demise while setting a new altitude record had been widely reported in the media. Adopting the devices of the air drama, the author reconstructed the aviator’s last moments as a breakthrough from the limited territorial definition of national identity. As he leaves the baser realm of the body to the transcendental home of the spirits, Pushkarev’s fictional alter ego ceases to be “tied to a particular piece of the earth called Russia.” Instead, the aviator becomes a part of a community that is “simply human.” Leaving behind the nation also engenders his final apotheosis: when bystanders run to the wreckage, the pilot’s body is nowhere to be found.51

The prospect of liberation from all earthbound indices of identity appealed particularly to members of the Symbolist movement, who imbued the artifacts of technological modernity with the potentials of accessing a limitless noumenon. The poet Alexander Blok declared in 1913: “Art grows, a winged dream, a mysterious airplane for escaping from the earth; industry grows so that people can leave the earth behind them.”52 Valery Bryusov, a founder of the movement and early enthusiast of science fiction, anticipated the air drama in an early short story titled “Star Mountain” (“Gora zvezd,” tentatively dated to 1899).53 Its setting in the Saharan desert was undoubtedly influenced by Jules Verne’s *Five Weeks on a Balloon*, translated into Russian in 1866, and Rider Haggard’s *King Solomon’s Mines*, translated in 1891. Unlike the Western texts, however, the flying machine occupied a relatively minor place in Bryusov’s symbolic account of the ascent of the consciousness. Lost after an air crash in the Sahara, the hero encounters a fantastic fortified settlement organized in a vertical spatial hierarchy, in which oracles (*zhretsy*) occupy the highest strata. The aviator’s unique perspective on space enables him to decode the city’s symbolism, storm.
the quarters of the priests, and take away many arcane secrets of technology, spiritual growth, and most importantly, immortality.

“Star Mountain” also aligned aviation with another mythic space, Atlantis, which captured the imagination of many Russian intellectuals. Bryusov himself delivered a series of lectures on the subject at the Moscow State University. The capacity of airplanes to fly over inhospitable terrain and penetrate remote corners of the Earth gave an added impetus to the search for the lost city early in the twentieth century. Bryusov invoked the travel accounts of Leo Frobenius, a late-nineteenth-century authority on Atlantis, who claimed to have unearthed its remains in the depths of the African desert. Whereas Frobenius claimed that the city disappeared before his very eyes, Bryusov’s aviator rescues the esoteric knowledge preserved by the seers, bringing it back in his futuristic airplane. He also carries back the queen, an embodied form of the spirit of Atlantis.

Although members of the Russian Futurist movement, which emerged in the 1910s, roundly condemned the “bourgeois mysticism” of their Symbolist predecessors, the lure of esoteric knowledge, the image of a secret brotherhood, and the potential of transgression and rebellion made aviation a particularly attractive metaphor for their subversive agenda. The poets David Burliuk and Vladimir Mayakovsky decided early on that the airplane, which represented violation of the sacred space of the sky, was the best metonym for their metaphorical “slap in the face of public taste.” They found a personification of both these ideals in Vasily Kamensky, an early civil aviator who had forsaken a full-fledged writing career in order to inhabit the sky. The choice was not accidental. During an exhibition flight in 1911, Kamensky’s plane crashed in a marsh, rendering him senseless. Several hours after local newspapers had already announced his demise, he emerged from the swamp alive, prompting speculations that pilots can resurrect themselves from the dead.

Kamensky represented the conjunctural moment when the airman became as powerful a spectacle as aviation itself. His flamboyant presentation “Aviation and Flight in Futurist Art” opened one of the first public gatherings organized by the Russian Futurists. Kamensky’s personality, which combined invincible masculinity with dangerous
charm, also served as one of the earliest prototypes for the Futurist ideal of the self. This ideal was dramatized in a performance titled Victory over the Sun (Pobeda nad Solntsem) in 1913. Khlebnikov, who wrote the script with Alexei Kruchenykh, collaborated with the artists Kazimir Malevich and Mikhail Matiushin to transform the lone figure of the aviator into a prototype for all humanity in the near future. Victory over the Sun featured a community of “futuremen” (budetliane) whom flight had made indistinguishable from both their fellow humans and their machines. This recognizably Fedorovian collective also enacted a unique subversion of the Icarus myth. Instead of being burnt by the sun for flying too high, they merged with the elemental source of natural energy.60

The exciting new visual genre of aerial photography played a significant role in the Futurist opera. Pictures taken from a perspective that was hitherto limited to a select coterie of airmen revealed that height, the defining paradigm of the spatial hierarchy between Heaven and Earth, seemed to disappear when viewed from the top. Commenting upon a “bird’s eye view of New York” in 1909, a reporter for The Field exclaimed: “Even the tallest buildings merged with the flat land that lay under them, making the city a vast steppe.” While documenting the demise of the Chaadayevian binary between city and steppe, the journalist also predicted with astonishing prescience that the visual revolution, generated by the ability to “suddenly see things from above, not sideways or below,” would surely lead to radical experiments in artistic expression.61 Kasimir Malevich’s famous sets for “Victory over the Sun” removed the eye to an indeterminate point above the Earth’s surface, transforming the world below into a set of stylized geometric forms that would become the hallmark of the Suprematist movement in art.62 Inspired by the perspective of the aviator, Malevich replaced cartography itself with the radical gesture of non-representation. Just as the hero of the air drama and the community of victors over the sun cut their ties with the restrictive terrestrial paradigm of the nation, shapes floating in indeterminate space became the Suprematist’s picture of the world.

The Futurist performance echoed many tropes from a later category of popular science fiction that left behind the individualistic frame of the air drama. Instead, science fiction about aviation in the 1910s rep-
resented it as the catalyst for abolishing all concepts of national, linguistic, ethno-racial, and religious identity. As usual, scientific illustrated magazines symbiotically energized this kind of fiction. *Nature and People* carried a feature, “New Year Visits on an Airplane” (“Novogodnye vizity na aeroplane”) in 1910, which asserted that soon aviation will be so freely available that people will be able to cross national frontiers on goodwill visits to former enemies. The science fiction writer Vladimir Semenov published two serial novellas in the same periodical about the democratic internationalism that would pervade the world when everyone had free access to the sky. *Kings of the Air* (Tsari vozdukh) and *Queen of the World* (Tsaritsa mira), published in 1910 and 1911 respectively, depicted airplanes as messengers of peace superseding fortifications and barriers that had separated warring nations for centuries. The first novel recounted the formation of a future community after representatives from France, Germany, the United States, and Russia have witnessed the Earth from an airplane and undergone an unprecedented revolution in their consciousness. *Queen of the World* extrapolates this dream even further by envisaging a social order modeled upon an aerial perspective of the Earth, whose inhabitants have transcended the human form altogether. The “indistinguishable boundaries between their bodies, their vehicles, and the sky surrounding them” make this community an embodied version of Malevich’s abstract geometry.

While the dissolution of boundaries, height, and depth from an aerial perspective generated bold visions of universal brotherhood and global equality, a classic work of science fiction, translated into Russian in 1909, took up the precise danger against which Fedorov had warned his readers. Wells’s *War in the Air* projected the calamitous fate that might befall a world laid bare to the bird’s-eye view. The protagonist Smallways, like the Russian Futurists, joins the air force out of an abstract love for “the ideal of speed” and aviation’s power to break down “old boundaries, old separations and seclusion.” A staunch defender of the notion that technology will bring forth global unity, he believes that “mechanical traction, bringing men so much nearer socially, economically, physically” would lead to a future when “old separations into nations and kingdoms were no longer possible” (98). The chain reaction of alliance systems and military necessities, how-
ever, turn Smallways’s dream into a nightmare of brutal destruction, in which innocent human lives instead of national boundaries fall victim to the omniscient gaze from the sky. Apart from Wells’s ominous novel, Russian readers were also exposed to other fictional extrapolations of air war from France and Germany. Mark Volokhov, the pioneer of the air drama, translated Pierre Giffard’s *La Guerre Internationale* in the same year as Wells’s *War in the Air*, and two years later, Rudolf Martin’s German novel on the same theme, *Die Weltkrieg in der Luft*.

As the clouds of war gathered over Europe, fictional speculations about the dire consequences of aerial warfare acquired an unprecedented aura of veracity. The ethical imperatives that shaped Fedorov’s picture of ascent and the cognitive liberation that aviation represented for science fiction writers and Futurists alike disappeared from public culture, leaving the Russian audience, like Bert Smallways, gazing at a violently re-territorialized picture of the world. Militarized spectacles of the emerging national air force, which Palmer documents in detail, replaced utopian visions of transfiguring humanity into a global community of aviators. Accounts of British attempts to chart alien territories from balloons, which generated Wells’s dark premonitions, took pride of place in Russian magazines: an article in *Around the World* predicted that in an age where ground level fortifications and naval power were fast becoming obsolete, aircraft would evolve into the most sophisticated war machines. From 1914 through 1916, macabre predictions from science fiction were translated into alleged reality in news from the frontlines. Fighter pilots, dropping hand grenades from the sky, became ultranationalist “heroes of the air.” In contrast with the streamlined uniform look of the futuremen, their bodies as well as planes were clearly demarcated as belonging to one or the other territorial unit. The very machine that promised to set the flier free corralled him back into the narrow confines of the nation. By 1915, his photograph was crowned with the slogan “angel of death.” In a series of elegiac sketches called *Mystical Images of War*, the avant-garde artist Natalya Goncharova visualized the redemption of the angel of death by recuperating the tropes of transcendence and transfiguration ubiquitous in the early air dramas. Angels, presumably escorting the war pilot heavenwards, fuse with the already indistinguishable boundaries between the human, the machine, and the sky.
Even for writers and artists who had initially dreamed of transforming, in the language of Revelations, “the heaven and the earth” through the airplane, the war resurrected the age-old fear of violating divine order. Blok’s characterization of the intelligentsia on the eve of the Revolution, “riding a rickety airplane above the molten lava flowing below,” distils the essence of air-minded literature in this period. As images of military airplanes became ubiquitous in the media, Khlebnikov, one of the victors over the sun, published a dark meditation on aviation titled “The Crane” (“Zhuravl’”). Unlike the dove that marked the culmination of the Trans-Siberian train-tree, the crane was a perversion of organic life constructed out of metal. The age-old symbol of fertility and regeneration metamorphoses into something even more terrifying than Fedorov’s image of the lifeless prosthesis: after years of inciting humans to annihilate each other, the animated steel monster abandons its acolytes forever.
While the real violence of earthbound nationalism ultimately took over aviation’s science fictional potentials for abolishing divisive notions of national identity and transforming Russians into elemental superhumans, these aspirations lived on and acquired new dimensions in a space that would not become physically accessible until the late twentieth century. Cosmos—as outer space came to be called in Russia at the turn of the twentieth century—was a unique frontier that was completely mediated through the conjuncture between technology and the imagination. It was also the only space that was not fraught by the nation’s self-perception of backwardness. Unlike the railways and aeronautics, astronomy was one field in which Russia could claim to be as competent as its European counterparts. The government actively promoted the development of astronomical sciences since the 1860s, leading to the establishment of three powerful observatories in Moscow, Petersburg, and Kazan’ by 1901. The extensive press coverage that accompanied each new astronomical discovery demonstrates that the advent of telescopic and spectroscopic photography radically changed the reading public’s relationship with the farthest imaginable frontiers of space. Images transmitted from the Liksky Observatory, just south of Moscow, reached the press the very next day and astounded readers who had so far only seen the depths of the cosmos in their mind’s eye. Astronomical photography, in fact, significantly elevated the status of scientific illustrated magazines. A reporter for *Nature and People* named V. A. Bitner was awarded a prize for being Russia’s “most popular columnist” once his articles on outer space began to feature authentic visual representations of “zodiac lights,” “Martian canals,” and the surface of the moon.

The rapid development of imaging technologies catapulted the pursuit of astronomy to new sites of public culture such as the scientific illustrated magazine. Through close-up images of cosmic bodies reproduced on the printed page, the average citizen could now enjoy the same intimacies of total estrangement as the scientist looking through his telescope in the confines of the observatory. To what extent this shift affected the perception and representation of the self becomes evident from a set of new spatial coordinates that the maga-
zines began to use. Instead of taking the audience’s cartographic location as the frame of reference, the size, shape, and speed of heavenly bodies emerged as the standard for representing things on Earth. Thus the canals of Mars provided the scale against which the Grand Canyon was judged “tiny.” On the 28th of May, 1900, residents of Kazan’ were informed that they are precisely 400,000 versts away from the point of view of an individual riding Haley’s comet. Opening the pages of a popular science magazine made the reader an instant witness to “the sunset as viewed from the surface of Neptune.”

Cinema, as demonstrated by Georges Méliès’s iconic lunar fantasy from 1902, was always uniquely amenable to science fiction’s manipulations of distance, perspective, and scale. In Russia, as Yuri Tsivian suggests, the “tricks” of early French films decisively influenced the experimental writing of Symbolists and Futurists. No attention has been paid, however, to the way in which the cinematic form transformed outer space from an abstract concept into a uniquely science fictional interactive environment. Scientific illustrated magazines in 1899 reported with great excitement that an “amazing new space called the scientific theater” had just opened in Berlin, which was poetically named Uranie. According to an eyewitness, this special kind of cinema “completely reverses our perspective on what lies beyond the familiar boundaries of the Earth.” The legendary journalist Bitner provided an especially intriguing account of visiting the Berlin scientific theater. He had been to planetariums before, he reported, but nothing had prepared him for this experience. The moving images on the screen seemed three-dimensional, virtually “sucking in” the audience toward the Moon, Venus, and Mars. Bitner trenchantly observed that for “the eye unaccustomed to the joys of flight,” the experience “was even more delightful.” As the journalist waxes poetic about the “fantastic spectacle of a solar eclipse on earth from the moon,” it is easy to forget that his account predated the advent of aviation. Watching the cinematic stunts of Méliès may indeed have prepared the Russian audience for the immersive science fictional experience of flying through the cosmos.

Uranie was a technologically created space that completely unmoored both the eye and the “I” of the spectator. Unlike the planetarium, which replicated the earthly perception of the heavens in
sharper focus, scientific theaters introduced the spectator to the feeling of floating in unlimited space. Interactions with this novel medium also diverged significantly from the experience of going to the ordinary movie theater. As Denise Youngblood has argued, cinema that defamiliarized everyday life in Russia created an uncomfortable disjuncture between the real world of socially segregated spaces and the jarringly democratic proximity of the theater. Astronomical spectacles literally performed a different kind of estrangement. Transcending quotidian experience, or byt, as Zamyatin put it, they transported the audience to a higher plane of existence or bytie. Soon enough, the Russian press announced with great fanfare that a scientific theater, named Urania after its German prototype, was being built in St. Petersburg.

The scientific theater emerged in synergy with a new variety of cosmic literature. Whereas nineteenth-century figures such as Fedor Tyutchev directed their thoughts toward the heavenly depths from the terra firma of an earthbound perspective, writers and thinkers of the turn of the twentieth century radically displaced their narrative personae. Nikolai Morozov, an astronomer, poet, science fiction writer, and philosopher, wrote a cycle of poems called Star Songs (Zvezdnye pesni) in 1894 from the viewpoint of each planet in the solar system. In two poems published in 1905, which were tellingly titled “In the Future” (“V budushchem”) and “From the Comet” (“S komety”), Bryusov conceived of a lyric voice that spoke from outer space to the inhabitants of the Earth.

Science fiction about space travel directly indexed the astronomical revolution mediated by still and moving pictures. Rather than imitate the adventure tale of an individual flying to the moon on an improbable means of transport, Russian writers attempted to reproduce the astounding effects of estrangement and revelation experienced through spectroscopic images and the scientific theater. In 1892, the same year that a journalist in Nature and People wrote a speculative description of the mechanism of a spaceship, the popular writer A. G. Liakide produced the first full-length “astronomical odyssey” titled In the Ocean of Stars (Vokeane zvezd). Liakide did not dwell on the technical specifics of the spacecraft. In the manner of Stanley Kubrick and Andrei Tarkovsky in the latter-day space age, his novel focuses on the ways in which the journey transforms the inner life of the crew. Photo-
graphs and data sheets interspersed through the narrative gave the science fiction tale an extraordinary aura of verisimilitude.

Alexander Krasnogorsky’s remarkable novel *On the Ether Waves* (*Povolnam efira*), published in 1913, also foregrounded the distinctly Fedorovian preoccupation with the epistemological and ontological effects of conquering the cosmos. Although by this time a spaceship called the *Conqueror of Space* had appeared as technological facilitator of the journey, estrangement from everyday life nevertheless remained the ultimate objective of the quest. Instead of following a cogent story line like the Jules Verne novels that doubtless inspired it, Krasnogorsky’s science fiction evolved into a contemplative commentary on restoring harmony within and beyond the earthly sphere.

A similar preoccupation distinguishes the science fiction stories of the composer of “star songs.” Morozov represented space flight as the catalyst for attuning human cognition with the “consciousness of the universe.” His “Travels in Outer Space” (“Puteshestvie v kosmicheskom prostranstve”), for example, assumed the form of a logbook that transcribes, in real time, the visual field of a group of scientists traveling beyond the solar system. Like the authors of popular astronomical tales, Morozov relied on media images to create special effects. Vistas unfolding before the narrators are explicitly compared to “thousands of photographs taken through the telescope” (12) and each fictional description of a heavenly body is accompanied in the original edition by a photographic illustration reproduced from the popular press. In consonance with Fedorov’s views, the protagonist’s subjectivity expands and multiplies as a result of this journey, until “[he] carries in [his] mind’s mirror a thousand worlds beyond my own” (39).

These practically unknown works of cosmic fiction represent a remarkable conflation between scientific and literary discourses; the metaphysical and mechanical aspects of space flight; and the voices of the scientist, writer, and prophet. Michael Holquist, in one of the very few studies of Tsiolkovsky’s science fiction, identifies precisely such conflations as his hallmark. As noted in the introduction, Tsiolkovsky’s most revolutionary ideas were condensed into a series of fictional narratives propagated through the popular press and targeted toward the general public. What distinguished his science fiction, however, was the technological acuity with which he portrayed the instruments
of space flight and projected their possible uses once humankind has been liberated from the gravitational field of its home planet.

The short story “On the Moon” (“Na lune”), published in 1893; the novella “Dreams of the Earth and the Sky” (“Grezy o zemle i o nebe”), published in 1897; and Tsiolkovsky’s most extensive fictional work, “Outside the Earth” (“Vne zemli”), published in 1916, formed a trilogy embodying the genesis, evolution, and final synthesis of the technological and eschatological aspects of space flight. “On the Moon” retained the traditional mode of dream-transport from age-old voyages imaginaires. Since the author’s model for a monoplane (Aeroplan ili pitsepodobnaia [aviatsionnaia] letatel’naia mashina, 1894) and a project for autopilots (Prostoe uchenie o vozдушnom korabli i ego postroenii) from 1898 had elicited positive reactions from the readers of Aviation Herald, Tsiolkovsky included them as illustrations in his second novella and expanded the narrative’s scope all the way to the asteroid belt of the solar system. The third work, also interspersed with detailed calculations, diagrams, and plans, delineated the final phase of departure from the Earth and the resettlement of humanity in so-called “hothouses” suspended in the cosmos.

The same specters of strife and shortage that animated Fedorov’s practical philosophy also inspired Tsiolkovsky’s arguments for abandoning the Earth. Like the Trans-Siberian Railroad, Tsiolkovsky’s spacecrafts evolved first into an extension of organic life and then into a self-sufficient habitat. Even though they represent literal shells for protecting humanity against earthly degeneration, the hothouses suspended in outer space teem with plant, animal, human, and even alien life coexisting in perfect Fedorovian harmony (235–36). On an unprecedentedly grand scale encompassing the whole universe, Tsiolkovsky not only resolves the tension between Khlebnikov’s picture of a world without frontiers and Gastev’s construction of a hermetic enclosure, but also the two images of aviation as a machine of liberation and a machine of conquest.

In marked contrast with the limitless cosmic frontiers of Tsiolkovsky and his predecessors, the best known works of early Russian space fiction focus on a very clearly defined territorial unit. Alexander Bogdanov’s Red Star (Krasnaya zvezda), published in 1908, and Alexei Tolstoy’s Aelita, published in 1922 and adapted to the big screen by
Yakov Protazanov in 1924, contemplate the state of the nation from the alternative environment of Mars. Although separated by almost two decades and the historical rupture of the October Revolution, the literal and figurative points of departure in the two works represent equally fraught moments of political unrest and ideological uncertainty. Bogdanov’s protagonist, Leonid, a disillusioned member of the intelligentsia who participated in the failed revolution of 1905, gets abducted by an exploratory team from Mars. Tolstoy’s novel features Los, a depressed scientist who builds a spacecraft in order to escape the violence that has swept the world during the First World War and the October Revolution, and his unexpected companion, Gusev, a Red Army veteran who has “helped form three republics on Earth” but cannot settle down to postrevolutionary civilian life. Mars transforms these characters in distinct but equally ambiguous ways. Leonid, who enthusiastically witnesses an advanced stage of socialism on the Red Star, returns home practically insane after hearing that the Martians, who are running out of space and resources, will shortly invade Earth. Los and Gusev encounter a society in the advanced stages of capitalist modernity—flying cars and televisions are just two of its many technological luxuries—that has also run out of physical resources and vital life force. Its inhabitants have retreated to the countryside to spend their last days in quiet contemplation, suppressing desire and emotions in favor of cold rational thought.

Los and Gusev, the man of thought and the man of action, complement each other in the course of reawakening Martian society and staging a socialist revolution. They return to Earth, however, not in triumph but in a quiet resumption of old ways. Los, realizing that everyday life has returned to its usual uninspiring course, continues his angst-ridden existence by longing for his lost love, Aelita, the princess he has left behind on Mars, while Gusev resumes his usual philandering and nomadic quest for adventure. As Robert Markley notes in his recent study of Mars in popular culture, “revolution ends not with a new order and endless progress but with a return to romantic stereotypes.” The lack of resolution in both Bogdanov and Tolstoy’s novels have inspired many scholars to speculate whether Mars represented an idealized form of Russian society in the future or a corrective antutopia critiquing the Bolshevik paradigm of revolution, an alien envi-
environment symbolizing Western capitalist modernity or a stage for working out Russia’s “domestic drama” under the New Economic Policy, a period roughly between 1921 and 1928 when ideological expectations of revolutionary transformation were suspended in favor of stabilizing the economic and social aspects of daily life.88

In contrast with the overwhelmingly historical orientation of existing commentaries, Jameson’s spatial model of science fiction allows us to interpret Mars as the endpoint of a rich trajectory of reimagining Russia in geographical terms. Bogdanov and Tolstoy’s Martian fiction represents the last frontier of the narrative arc of open and closed spaces delineated in this chapter. Just like Siberia and the sky, which liberated the nation and its people from the dominant cartography and teleology of modernity only to be closed off in enclosures besieged by degeneration and violence, Mars corralled the cosmic ideology of limitless estrangement into a frightening specter of incarcerated utopia. This spatial imagination of the revolutionary future constitutes the tragedy of return in both Bogdanov and Tolstoy’s works. Netti, the only character in Red Star who is skeptical about the socialist order, shatters Leonid’s faith by sketching out a particularly evocative map: “The individual advanced countries where socialism triumphs will be like islands in a hostile sea, which will be perverted deeply and for a long time to come by years of encirclement, unavoidable terror and militarism, and the barbaric patriotism that is its consequence.”89

As for Tolstoy’s heroes, the only way out of the existential dead end they encounter upon returning home is depicted not in the original novel but in the last sequence of the film. Gusev and his new partner stand waiting on the platform for the “Eastern train” that will take them to Siberia—and return the nation to the original hopes and fears invested in its open frontiers.
Transcending Time

The same cinematic medium that transported Russian science fiction into Siberia, the air, and outer space also transformed representations of the here and now in remarkable ways. In a story titled “Only Details” (“Tol'ko detal’”), published in 1924, the Futurist Nikolai Aseev presented a stereoscopic picture of everyday life changing before the very eyes of the reader. By speeding up the crank, the narrator blurs familiar scenes of Moscow streets into increasingly symmetrical transparent structures, with its pedestrians evolving first into swift locomotives and then into airplanes. These momentous changes, moreover, take place within the space of a single hour. The resulting kaleidoscope of fragmented perspectives and perceptions, shot through with multiple, conflicting regimes of time, generates a remarkable science fictional ekphrasis of an ordinary Moscow thoroughfare.

Long before cinematic time had thoroughly interpenetrated the flow of everyday life in Russia—and eventually received formal recognition as the primary index of a new “reality” thanks to experimental filmmakers such as Dziga Vertov, who introduced the concept of “cinema vérité”—burgeoning media outlets had already identified several products of the transportation and communications revolution as fantastic time machines. A Russian visitor to the Berlin Industrial Exposition in 1896 reported that some exhibits “physically took [him] to the science-fiction world of Jules Verne and Camille Flammarion.” The objects of his ecstasy were prototypes of the escalator and elevator, which made “The world whirl around me, moving so fast that I seemed to be taken forward in time.” Reporters of The Field predicted that Otis escalators and mobile sidewalks, first exhibited in the Paris Exposition in 1889 and again in the World’s Fair in 1900, would soon force city dwellers to set their clock forward [emphasis in text]. Most fascinating for Russian observers was the actual experience of the Paris
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Subway, inaugurated on the occasion of the World’s Fair. The Field produced a number of articles on the subject, one accompanied by no less than nineteen diagrams of the machine on which Parisians of the future would nimbly zip to and fro under their city. As discussed in chapter 1, the railways had already forced nineteenth-century thinkers to acknowledge that speedy communication was altering the perception of time as well as space. By the end of the century, however, subways, elevators, and escalators dominated speculations that walking on streets would become obsolete altogether. With the advent of swift machines that were projected to serve as urban transport in the near future, speed came to be acknowledged as an inalienable component of the modern life ardently sought by readers residing in Russian cities.

Soon after the Paris subway took the Russian media by storm, an obscure author also claiming to be an “inventor” produced a science-fiction novel advocating a similar mode of transport. Alexander Rodnykh’s Automatic Subway between Moscow and Petersburg (Samokatnaia podzemnaia doroga mezhdu Moskvoiu i Peterburgom, 1902) demonstrates the extent to which the new obsession with transcending time had penetrated Russian ideas of modernity and seamlessly crossed the boundaries between reality and representation. Structured as a proposal laid out for public opinion, the novel underscores that unifying large distances was much less important than the time it takes to traverse that distance. Temporality rather than territorial control “determined the legitimacy of an economy, an individual, a people.” Rodnykh’s narrative alter-ego bemoans the stereotypical bureaucratic resistance to “bringing Russia up to speed” through a scene in which a Petersburg official asks, “But why do we need a faster subterranean train? We already have one running over ground” (38). Well aware that the necessary electrical energy to run a subway between the two cities did not exist, the novel proposes a new method of fueling the futuristic vehicle with the gravitational force of the Earth. Thus powered, the projected “automobile train” would cover the distance between Moscow and Petersburg in less than an hour, making it the envy of the western world that used more costly fuel, electricity, to produce much slower locomotives (111).

New modes of personal transportation marked an even more profound break in the everyday experience of time. Railroads and sub-
ways did not replace the horse and cart on the streets, while bicycles and automobiles affected the innate temporal texture of urban life, transforming the rhythm of social interaction and work. Between 1886 and 1890, the introduction of equal-sized wheels and pneumatic tires modified the original uncomfortable models of bicycles sufficiently to make them a viable mode of transport. *Nature and People* proclaimed that the inexpensive machine was four times faster than walking, while European companies were already marketing its unique potentials to the Russian urban middle class. Cycling across the city did not just save time; unlike the horse-drawn carriage, it fused man and machine into a new symbol of the dynamic modern age.

Advertisements for the *velosiped* (a calque of the French *velocipede*, “speedy feet”), in fact, illustrated the body itself growing more streamlined, efficient, and energetic by virtue of its contact with the bicycles’ revolving pedals.7 With the application of a motor run on petrol, moreover, both the bicycle and the body were further transformed into a truly composite marvel. The first internal combustion engines, invented by Daimler in 1882 and attached to cycles in 1893, triggered tremendous publicity around miraculous “auto-mobibles,” *samokhody*, in the Russian media.8 Although motor cars did not immediately become a product of mass consumption either in the West or in Russia—the first dealership selling imported models opened in St. Petersburg only in 1913—new models of *samokhody* were enthusiastically described and compared for speed in the popular press.9 Photographs of the Russian aristocracy with their new acquisitions, “motorized carriages,” adorned the widely read society column of *The Field.*10

The social mobility associated with the early high-speed vehicles imbued them with a mythical aura even for those who could only dream of owning them. Zipping through the cumbersome traffic of horse carriages, the bicycle and its advanced version, the automobile, spelled complete freedom from time, reminiscent of the fairy-tale *samokatka* on which legendary heroes traversed great distances in the blink of an eye. In a speculative article on the future look of the city, the popular science writer Pavel Krymsky depicted a passing blur of mobile paths, cable cars, escalators, balloons and elevated railways: nobody walks in the future Petersburg ruled by speed.11

Verne’s classic novel *Around the World in Eighty Days* (1872; trans.
1874) had already primed Russian readers to vicariously participate in the new fad of speed records and races against time. Although Verne never admitted to having a model for his hero, two contemporaneous adventurers, George Francis Train and William Perry Fogg, had indeed attempted timetables of less than one hundred days to circle the world. Both Verne’s fictional hero and his real-life inspirations had undertaken their journeys on the strength of trains and steamships, particularly the North American and British Indian transcontinental railroads and the Suez Canal inaugurated in 1869. The popularity of the motor car, however, triggered a Russian science fiction account that no longer turned to nineteenth-century innovations. Readers of the magazine with a Verne-inspired title, *Around the World*, were regaled in 1901 with an ambitious account of a competition between two by-products of the internal combustion engine. Rather erroneously in light of future developments, the novel *Around the World on an Automobile* (*Na avtomobile around the world*, 1905), portrayed the victory of an automobile over an airplane in a race around the world, in which an enhanced, amphibian form of the motor car beats the record of Verne’s hero by a full forty days. But the fictional Russian automobile driver also differs from Phileas Fogg in a more profound way. Whereas Verne’s British aristocrat easily reenters an unhurried life at the end of his travel, the Russian protagonist can no longer synchronize his senses. Under the impact of his breakneck journey, the driver’s “thoughts and feelings rush insanely, vanishing like silhouettes along the road. The world seems to dance, jump, gallop in movements out of phase with his own.”¹² The subject of the novel ultimately becomes the conundrums of human subjectivity, caught in the time warp of incomprehensible speed.

**TELOS AND CHRONOS**

**THE TWO TIME SCALES OF SCIENCE FICTION**

The late nineteenth-century technological marvels that so altered the perception and value of time were both instruments and symptoms of the moment when progress first came to be identified as a temporal phenomenon intrinsically bound with acceleration and efficiency. Classical mechanics and Cartesian metaphysics provided the conceptual framework for their association. While Newton’s concept of time was absolute, homogenous, and atomistic, made up of discrete
units that agglomerated into a well-defined course of temporal progression from the past to the future, the mechanical clock served as Descartes’s model of humanity, regulated and controlled by a higher force, the Watchmaker God. Both material and human development could only proceed toward increasing levels of efficiency and coordination. The sudden acceleration in communications and transport at the turn of the twentieth century led to the advent of the standardized clock, the secularized metonym of Descartes’s Watchmaker God. In order to facilitate international trade, navigation, and telegraphic communication, the Greenwich meridian was declared as the universal reference point for a new cluster of time zones around the world. Private or local times, which in yesteryears depended on church bells, changing seasons, or festivals, was on the brink of becoming obsolete in the paradigm of global synchronization systems.\(^{13}\)

The increasing dominance of the public standardized clock provided the subject of an article in *Nature and People*, which declared that modern life had been reduced to a constant “War with Space and Time” ("Bor’ba s prostranstvom i vremenem"). A chart accompanying the feature maps the relative speed of several revolutionary means of transport produced in the last ten years. The remarkable feature of the graph, progressing from the horse cart to the electric train, including the bicycle, motorcycle, and automobile in between, was the choice of the second rather than minutes or hours as the unit of time. As time acquires unprecedented value in an age that worshipped speed, even the smallest unit on the clock face becomes significant for the definition of progress.\(^{14}\)

While the subway or the automobile promised to sweep up the individual in the relentless race against time, micro-events in the world of technology enhanced sensitivity to its smallest constituent parts. The camera, a well-known artifact by the end of the nineteenth century, so far reproduced static objects that seemed frozen and immortalized in time. With the advent of chronophotography in 1882, as the French physician E. J. Marey aptly called his portraits of a bird’s flight, the lens began to capture movement, visually break up its minutest components, and measure them in fractions of seconds. The particular effect of this invention on the perception of time did not go unnoticed in the Russian press. In an article called “A Thousandth of a Second” ("Ty-
siachnaia dolia sekundy”), the popular columnist P. Sil’vestrov commented upon the ways in which new visual representations of speed would vastly increase the awareness of the famous Russian proclivity for wasting time.15 The illustration accompanying the article was remarkable: what seems to be an airplane taking off from a hangar metamorphoses, in the space of a few frames, into a dragonfly.

Chronophotography actively contributed to the first scientific efforts at the turn of the twentieth century to reduce wasteful actions of human beings engaged in industrial production. The American economist Frederick Taylor first proposed “scientific management of labor” in order to streamline the assembly line, extending the concept of updating machines to the human body. He used chronophotography in the 1880s to study the minutest of movements the worker made and then determined the exact series of elementary operations required to complete the job.16 His disciple, Frank Gilbreth, used the “chronocycleograph,” cameras that illustrated movement in even finer detail, to produce “motion studies” of bricklayers for an experiment that meant to speed up their production by three times. He declared the efficacy of his recording machine using identical words as the Russian popular science writer: “We can now for the first time record the path of individual motions to the thousandth of a minute.” Taylor and Gilbreth sought to select the quickest series of actions, time each elementary operation with a stopwatch, and establish “minimum unit times for an operation” according to which the worker would be paid.17

Never had public time, mediated by science and technology, and traditional or private time, branched out into such separate areas and come into such great conflict. Even though speed and efficiency had
become new buzzwords in the Russian desire for modernity, the two science fictional accounts discussed earlier demonstrate that the cult of urbanization and standardization also elicited a deep sense of ambivalence and suspicion. Whereas Rodnykh’s project for an automatic subway celebrated the advent of modernity on a long-distance subway, the subversive retelling of Verne’s *Around the World* restored the individual to the center of the contestation between public and private time.

Prominent psychologists in the West had already located the etiology of a number of maladies in the race against time. In 1881, George M. Beard introduced the diagnostic category of neurasthenia, nervous exhaustion, to the emerging discipline of psychiatry, attributing the ailment to the recent increase in the tempo of everyday life. In a treatise ominously named *American Nervousness*, he directly associated the predominance of neurasthenia with the blind ethos of modernity. America, whose economy had benefited enormously from the revolutionary developments in transportation and communication—Beard describes businessmen engaged in “a thousand times more transactions in a given period” with the help of the wireless telegraph, railroads, and steamships—provided the scholar with a particularly rich site for developing a sociology of nervous illness.18 Beard set the tone for much scholarly speculation about the nefarious effects of the increasing tempo of life.

Nordau added Beard’s statistics to similar figures on the rise of crime, madness, and suicide: never before, the German psychologist argued, did machines for conquering time “penetrate so deeply, so tyrannically, into the life of every individual.” “Every scene we perceive
through the window of the flying express, sets in activity our sensory nerves and our brain centers,” Nordau claimed, adding that speed and efficiency had permanently damaged the faculties of cognition: “Our suspense pending the sequel of progressing events . . . cause our brains wear and tear.” His main contention rested on the disjuncture between technological modernity, scientific principles of efficiency, and human physiology, which was not allowed the requisite time to adapt: “No time was left to our fathers. Between one day and the next, with murderous suddenness, they were obliged to change the comfortable creeping gait of their former lives, and their hearts and lungs could not bear it.” 19 Western theories of degeneration, which first connected the standardization of time with physiological, cognitive, and emotional deterioration, were disseminated widely in Russia and retained their popular appeal for a considerable length of time. As late as 1910, Nature and People identified Beard’s “American impatience” among urban Russians, blaming the same aspects of industrialized civilization for their general spiritual degeneration and cognitive impoverishment. 20

The profound doubt with which the Russian press greeted Edward Bellamy’s Looking Backward serves as a fair indicator of the intense pessimism with which Russian commentators viewed their own country’s efforts to “catch up” with modern industrial civilization. Bellamy had visualized the future world as one vast factory, its workers living a happy life at the assembly line, as an equitable socialist mode of distributing profits ostensibly alleviates their economic hardship. Three reviews of the novel in Vestnik Evropy sharply satirized his resolution of the conflict between the individual and the regimes of the clock and calendar. Russian reviewers praised parodies of the novel instead, which emphasized the dehumanizing effects of a system in which private time would be sacrificed completely to the exigencies of maximum production. 21

In contrast, H. G. Wells’s early accounts of time travel, which depicted an especially cruel and hopeless world to come, seem to have provided a far more potent literary inspiration. Wells’ science fiction literalized temporality itself to criticize the valorization of scientific, industrial, and social progress. The Time Machine (1895; trans. 1897) and When the Sleeper Wakes (1899; trans. 1900) delineate the negative consequences of reducing humanity to cogs of the production clock.
The time machine first takes its inventor to a world where the workers have overturned the balance of power, yet breed their former masters, the Eloi, for cannibalistic fodder. Further excursions into the future bring Wells’s time traveler face-to-face with a sight so dismal that he flees back to the present: on a deserted beach, he sees future humanity devolved into a crab-like mass of flesh, passively waiting for the sun to be extinguished.

This portrait of the last tragic moments of the living universe was inspired by a momentous discovery in physics that would have a profound effect on the Russian imagination. The British scientist Lord Kelvin’s speculative theory of entropy, the dissipation of heat through time, provided a useful trope for extrapolating that human civilization was doomed. Mathematicians and physicists in Russia acknowledged that if the universe were to literally freeze over, all notions of progress would become meaningless. Entropy provided a potent metaphor for the dark side of modernity portrayed in many early experiments of science fiction. Vladislav Uminsky’s *In the World of the Future: From the Lives of Martians* (*V mire budushchego. Iz zhizni obytatelei Marsa*, 1896), depicted “descendants of humanity” awaiting the final disaster of the sun’s death among the ravaged postindustrial remnants of a Martian landscape. Alexander Kuprin’s story “The Liquid Sun” (“Zhidkoe solntse,” 1911) similarly culminated in a futile battle with the forces of entropy. Although its protagonist devises a method to store solar energy for the impending cold and darkness, the subterranean tank he fills with light explodes at the last moment. The cult of speed and the preoccupation with the race against time provided an additional negative subtext for Kuprin’s apocalyptic tale. The experiment fails because the scientist arrogantly attempts to pack too much energy into the vessel in too little time.

Science fiction in Russia became the primary site for translating the inherent conflicts of modern temporality into a subtler geopolitical and cultural narrative of resistance to the global dominance of the clock and calendar. Self-destructing industrialized societies inevitably took on the garb of an undefined but alien West. Alexander Belomor’s popular novel *The Fatal War of 18??* (*Adskaya voina 18?? goda*), published in 1910, depicted a fictional European state that is completely subjugated by the engine of production. The workers display all the fea-
tures of Taylor’s ideal of efficiency and scientific management. Committed to the “devilish clock” that urges them on, they neither realize nor question the fact that the products of their labor are primarily armaments.\(^{24}\) Apocalypse comes in the guise of a world war, when the same efficient technology is turned upon a populace that once put together its component parts on the assembly line. The legend remains etched on “stone tablets” (45) in obscure caves, where the last survivors of the war have hidden themselves. Not coincidentally, the archeologist and chronicler of the apocalypse is a Russian, whose country has miraculously escaped the fate of the West and returned to “Orthodox Christian rhythms of life” (221).

Belomor adopted the device of reversing time, popularized by Edward Bellamy’s *Looking Backward*, to convey a radically different relationship between modernity, futurity, and science fiction. In contrast with Bellamy, reversed causation—looking backward in time—represented a metatextual protest against the fundamental principle of extrapolation in Russian science fiction. Belomor’s novel thematized the fallacies of linear projection that underlie the close conjunction between rationality, standardization, speed, and progress. Locked in the present, occasionally goaded on by the mirage of technological growth and material comfort, the victims of the “Fatal War” remain literally shell-shocked into losing the faculty of hindsight. The Russian narrator’s consciousness, in contrast, is attuned to both the cosmic and the human ebb and flow of time, where memory holds an important key to experiencing the present and shaping the future. By couching the future in a mnemonic framework, Belomor sharpened the element of anti-determinism underlying his cautionary tale.

The critique of what Benjamin called “homogeneous, empty time” acquired a particularly nationalist cast in science fiction that turned not to the secular mechanism of war but an archetypal apocalyptic trope with a long history in Russian religious and literary culture. Comets had long served as the metaphorical divine broom in millenarian legends and were often associated with alien, usually Western, invading forces that jolt Russia out of conformity and complacency. The seventeenth-century Old Believer Archbishop Avvakum, for example, prophesied that a comet would obliterate the newly reformed Orthodox Church, patronized by a Tsar whom papal influences from
Europe had hypnotized and corrupted. Tolstoy’s *War and Peace* featured the comet as a prophetic sign of the Antichrist, which signaled Napoleon’s invasion and formed the backdrop for Pierre and Natasha’s fateful first meeting. Even behind Odoevsky’s technologically triumphant Russia in 4338 lurked a comet that could destroy civilization in a moment (421).

The comet reemerged in science fiction at the turn of the twentieth century as a unique national symbol of poetic justice against the seemingly invincible forward march of capitalist modernity. Simeon Belsky’s novel, aptly named *Underneath the Comet* (*Pod kometoi*, 1910), discredited all faith in industrial civilization. It depicted a highly advanced society on the threshold of conquering the greatest ravage of time: death has practically become obsolete with the introduction of prosthetic organs, and artificial intelligence will soon replace the faulty mechanism of the brain with the clockwork perfection of machines. Even though all the citizens display various symptoms of Beard’s “American nervousness,” like the protagonists of Belomor’s novel, they are imprisoned in the race against time, a false teleology of progress, to such an extent that they fail to perceive the approaching comet as a symbol of imminent destruction. Just as the pioneer of artificial intelligence in the elite scientific corps announces that a superior clockwork brain, the “technological reason” or *tech-razum*, will replace humanity altogether, the divine instrument crashes into the laboratory and sends the city up in flames.

In spite of its naïve plots and unsubtle devices, popular science fiction intersected significantly with Symbolist attempts to fictionalize standard mechanical time. The motif of the comet, which runs through Bryusov’s experiments in apocalyptic science fiction, signifies first and foremost the forces of the noumenon invisible and incomprehensible to those intoxicated by the speed of modern life and the chimera of material progress. Interiority was Bryusov’s instrument of defense. Rapidly disappearing rhythms of memory, spirituality, and indeed love represented in his science fiction the lost portals of a higher eternal reality that hold the key to humanity’s salvation. Both “The Republic of the Southern Cross” (“Respublika iuzhnogo kresta,” 1905) and the unfinished novella “The Seven Earthly Temptations” (“Sem’ zemnykh soblaznov,” 1909–11) depicted a future that relentlessly reduces
the individual to a cog in a perfectly streamlined machine. Industrial timekeeping, which features prominently in both works, has solved Gilbreth’s dilemma of allowing workers any time to pursue their private happiness, simply subsuming periods of rest into a general schedule that extends from the workplace to the home.

The most frightening aspect of these societies was the translation of their temporal regimes into both the spaces of everyday life and the structures of power that organized them. Inhabitants of the fictional “Republic” in the Antarctic as well as the protagonist of “The Seven Earthly Temptations” live in collective quarters, a nightmare version of workers’ barracks in turn-of-the-century Europe, where the clock keeps constant track of their personal life. From the siren that wakes them up to the mandatory times set apart for sleep, their activities are strictly controlled and regulated so as not to waste even minimum potential for production. Their so-called rest periods leave no room for personal communion or spiritual contemplation, as the omnipresent gaze of supervisors, especially appointed to facilitate the smooth functioning of the clockwork men, ensure that workers adhere to all appointed times for various activities.

Such an existence governs the tragedy of “The Seven Earthly Temptations,” whose ominous title refers to an individual who is enslaved by giant corporations and, by extension, the public clock. His journey to a city in search of employment quickly becomes a parable of the fall from Eden as the initially uncorrupted narrator, fresh from the idyllic, timeless Russian countryside, metamorphoses into a mechanized automaton. The same subways, escalators, and elevators that had so captivated the Russian press evolve into shackles that kidnap the hapless victim from his village to the heart of the “constantly hurrying city” which will soon suck him up into its frenzied tempo. Each chapter of the novel highlights an aspect of man’s imprisonment in external, “earthly” (169) history. Every time the protagonist attempts to transcend the tentacles of the great public clock—the corporation where he is employed correspondingly bears the symbolically charged name “Octopolis” (190)—the mechanism of civilization drags him down toward a meaningless programmed existence. Like Belomor’s protagonist, his soul retains a faint shadow of his atemporal past, yet there is no hope for return to the paradise that modernity has permanently destroyed.
Bryusov’s narratives about the contemporary race against time culminate in similar apocalyptic visions of self-destruction. Whereas Belsky revived the mystical significance of the comet to predict the end of a civilization in relentless pursuit of progress, Bryusov depicts a fate befalling his fictional protagonists and civilizations that is far more violent. Nordau’s degeneration acquires the concrete form of an epidemic, a social rather than physical contagion, which attacks the perfectly organized and smoothly run state depicted in “Republic of the Southern Cross.” Under the abominable influence of an infectious disease called mania contradicens, the Republic dissolves into chaos as workers begin to behave in a manner completely contradictory to their assigned function. The three driving principles of a streamlined technologized society—“regulation, coordination and hierarchy” (21)—completely break down. As the pressures of efficient production have not allowed the workers to develop any emotional bonds, they ultimately annihilate each other in a genocidal frenzy.

**SIMULTANEITY, DURATION, FLUX**

**THE CREATIVE INTERVENTION OF SCIENCE FICTION**

It is ironic, therefore, that scientific insights and technological innovations generated in the West would also provide science fiction in Russia with the cognitive and structural means to transcend polarized reactions to the modern cults of speed and efficiency. Instead of unequivocally approving the contemporaneous race against time or idealizing a nostalgic pre-modern national past, science fiction soon began to articulate an original means to accommodate local and private rhythms of life to the public march of progress. It evolved into a primary medium for articulating the future from nonobjective perspectives, generating a novel mode of negotiating between global and local modernity that I term “creative intervention in history.”

A series of developments in the physical and mathematical sciences, along with certain technological innovations that came into vogue in the late 1890s, dramatically overturned the long-entrenched foundations of classical mechanics, which viewed time as atomistic, objectively quantifiable, and subject to infallible scientific prediction. The physicist Ernst Mach rejected Newton’s paradigm of absolute space and motion in 1883, dismissing the prevalent scientific approach to
time as an “idle metaphysical conception.” What truly endangered objectivist categories of time and Descartes’s Watchmaker God, however, was the theory of relativity proposed in 1905. Albert Einstein, following his revolutionary reconceptualization of space, designated time as the fourth dimension, demonstrating that its empirical perception, like space, was contingent upon the location and movement of the observer and his frame of reference. Since every bit of matter generates a gravitational force and since gravity is equivalent to acceleration, Einstein concluded that “every reference body has its own particular time.” He contrasted the old mechanics, based on one clock, with a new cognitive freedom that could “imagine as many clocks as we like.” Depending on the position of the individual, each of these clocks would show a different time at any given moment.

Other developments in physics at the turn of the century also opened the way for challenging the concept of universal progress and served to undermine the value of conquering time with speed and efficiency. In 1874, Clark Maxwell had demonstrated that light and electromagnetic energy traveled in a series of vibrations or “waves.” Although Maxwell’s discovery in itself did not relate to time, its practical applications in a number of key inventions at the turn of the twentieth century radically transformed the experience of temporality. Maxwell’s theory was foundational for the invention of Marconi’s wireless telegraph and the radio, which, along with the gramophone and the cinema, appeared to contradict the conception of time as absolute, homogenous, irreversible, and independent of human intervention. Edison invented the phonograph in 1877, a device that materialized time and broke down the barriers between the past, present, and future: by etching sound in wax, it spoke forward in time to the unborn and listened backward to the dead. Both these implications were enthusiastically discussed in the Russian popular press. First exhibited at the Petersburg Hygiene Exhibition of 1893, Edison’s invention moved a commentator in *Nature and People* to eulogize the machine that “trapped time in matter.” Around the World published a series of advertisements in 1904 that showed a woman in ecstasy after having heard her dead husband’s voice. A very similar image was used in the first advertisements of gramophone records; in this case, emphasis was placed on the “looping” of time, the ability to secure for posterity and repeat a
performance that in real life would be lost after the first experience. While the radio created an impression that the listener could simultaneously inhabit multiple pockets of time, the gramophone granted him unlimited control over its passage.

While only the rich could afford gramophones in their homes, a much more dramatic and democratic medium of contorting, expanding, and contracting time became accessible to the public even in small provincial towns. The reporter Vladimir Frei, who first wrote on the gramophone, begins an essay on cinema with a fairy tale in which a king wanted to view all the courts in his vast empire simultaneously. Frei concludes that if such a king had lived now, the magical “living photographs” could simultaneously project exactly such images. As for the continuity between the radical implications of the phonograph and the silver screen, he exclaims: “The phonograph brought the dead to life. Now they can be seen as well as heard!”

The advent of cinema posed an even more radical challenge to the foundational perceptions of time. Méliès recalled the accident by which he discovered how to excise whole intervals of time from a scene that would otherwise progress traditionally from beginning to end. While filming a street scene in 1896, a year after Louis Lumière composed the first moving picture, his camera jammed. The accident yielded a marvelous effect: an omnibus changed suddenly into a hearse. Soon after this incident, filmmakers learned to expand and compress time at will through parallel editing and slow motion. The resulting effects were most effectively demonstrated in “scientific documentaries,” a new attraction at the marquee that was enthusiastically popularized in the Russian press. A commentator marveled at the sight of a bud unfolding and a fly buzzing its wings in the same interval of time. The experience of the audience itself defied empirical perceptions and atomistic measurements of time. As figures on the screen moved much faster than in real life, and projectors, operated by hand, could be controlled at will, every showing of a film could be differently arranged subject to the operator’s whim. This last effect, which became particularly popular in Russian theaters, no doubt inspired Aseev.

The most significant effect of moving pictures, however, was to visually demonstrate time as flux. Whereas the still camera captures a particular instant of time, freezing its static subject and confining it to
a single moment forever, the rolling film relies on the preceding and succeeding images retained by the human brain in order to create the illusion of continual dynamism. While the cinema in actuality consisted of discrete still frames, the viewer perceived its images of the present clothed in halos of the past and future, much as atomic particles are made visible in their path through a cloud chamber. Thus the most popular technological innovation of the turn of the century unconsciously posed a serious challenge to the clock itself. The sketch by Ivan Puni of the railroad station at Vitebsk represents the iconic clock in a presciently surrealist mode. As the speed of life smashes together the various components of the space, the clock itself begins to melt.

The technological materialization of flux represented the popular experience of a profound revolution in philosophical conceptions of time that also arrived from the West. Friedrich Nietzsche and Henri Bergson, who inclined toward a Heraclitean rather than Platonic perception of time by turning to individual and internal experience, transformed Russian thought and art at the turn of the twentieth century. Nietzsche, whose enormous influence on Russian modernism has been
extensively documented by Edith Clowes, criticized the sanctimonious valorization of an absolute, inviolable past and turned his attention to the present and future. Key concepts in Nietzsche’s philosophy reveal the radical ways in which he sought to reverse the predominant modes of viewing past memory, present experience, and anticipation of the future as discrete categories. His contempt for the “abuse” of history was matched by an equally intense admiration for those who love their lives and are able to respond joyously to the theory of eternal recurrence.

After learning about some cosmological speculations that the present configuration of forces in the universe must repeat itself again and again, Nietzsche introduced the idea of testing one’s acceptance of the present in *The Gay Science* (1882). To the hypothetical question of whether one can live the life he experiences over and over, the philosopher concludes that only the one who does not dote on the past and live his life craving rewards for the future can answer in the affirmative. Such an Übermensch desires “nothing more fervently” than eternal recurrence, because he has made of his life something creative in defiance of the crushing burden of the past and the seductive hope of future paradise. Not only did Nietzsche restore value to the present, but also actively embraced the notion of human agency in shaping the flux of temporality. In *Thus Spoke Zarathustra* (1892), he declares that instead of passively accepting the flow of time, the philosopher must engage in the creation of new, life affirming values in a continuum of “self-improvement.” Acknowledging that such a view of time may offend the established hierarchy of the past or even the verity of the present, Nietzsche asserted nevertheless that the philosopher is “of necessity a man of tomorrow . . . a furtherer of man . . . and has always found himself in contradiction with his today.”

Like Nietzsche, Bergson repudiated the perception of time in mechanistic atomized categories and did not find anything redeeming in the passive glorification of the past. He proposed that philosophers and artists develop a completely fresh, “virginal” manner of looking at the world that would enable them to perceive the past, present, and future as part of “one immense wave flowing over matter.” Such a perception of time, he asserts, would also unite the abstracted spheres of ideational and experiential, public and private time, enabling humans to
reclaim the dynamics of change.\textsuperscript{45} In two seminal treatises, \textit{The Introduction to Metaphysics} (1903) and \textit{Creative Evolution} (1906), the philosopher focused on the problem of perceiving “the very substance of the world in which we live.”\textsuperscript{46} He calls this essence “duration” or \textit{durée}, the true nature of our experience in time, in which “reality appears as a ceaseless upspringing of something new” (53). Bergson stood squarely against the atomistic conception of time. He condemned the spatial representation of time, which reduced the richness of “duration” into utilitarian slots or “labels”; penetrating the shell of “intellectual forms and habits” governed by the clock and calendar required active “intervention” in the process of perceiving temporality (215). To Bergson, the internal life of things that escaped so-called scientific scrutiny was important for the purpose of reintegrating human existence with the harmonious whole of life. He cultivated a way of seeing that would apprehend private as well as public time, revealing the continuity between them.

It is important to point out that Bergson’s method for capturing “the unity of the impulse which, passing through generations, . . . makes of the whole series of the living one single immense wave flowing over matter” (272–73) derived directly from the revisionist views of time offered by the latest scientific theories. Bergson linked his concepts of duration and simultaneity with Einstein’s relativity and explained them through the physicist’s famous analogy of multiple clocks.\textsuperscript{47} \textit{Creative Evolution}, which developed a new synthetic paradigm of perceiving time that Bergson called intuition, describes both the philosopher and the artist as a “seer” in the literal sense of the word: endowed not with the paranormal vision of the mystic but with the refined, precise, and intense gaze of the scientist, he is capable of embracing concurrent realities. Just as Einstein revealed that a single scientific perception of time in effect ignored its real multiplicity, Bergson declares that the intellect alone is incapable of grasping the “upspringing” curvature of duration: “Whereas intellect goes all around life, taking from the outside the greatest possible number of views of it, . . . it is to the very inwardness of life that intuition leads us.”\textsuperscript{48} The philosopher speculated that humanity would attain its full development only when it merged the two forms of conscious activity, intellect and intuition, into a single epistemology.
Bergson’s views reached Russia around the same time as relativity, and elicited equally strong reactions. Einstein’s theories about time were unacceptable enough for a generation that had seen practically every established scientific method shattered in a space of two decades. Personalities as diverse as Lenin and the mathematician Nikolai Bugaev, the father of the Symbolist poet and literary theorist Andrei Bely, criticized the “syntheticism,” “vagueness,” and “lack of analytical thought” invading the rationally organized, cognizable world. Bergson’s philosophy drew negative reactions from the venerated philosopher Nikolai Lossky and irked Kantians such as Boris Babynin and Ivan Khlopov, all regular contributors to the influential journal Voprosy filosofii i psikhologii.

Representatives of the new generation in Russian arts and letters, however, wholeheartedly embraced Bergson’s methods for resolving the disjuncture between traditional and modern, public and private time. Hilary Fink, Elaine Ruskino, and James Curtis, documenting the long arc of the philosopher’s influence on Russian modernism, emphasize the direct and indirect means by which his concepts informed the Symbolist, Acmeist, and Formalist movements. Bergson’s thoughts resonated particularly well with the uniquely Russian search for panunity or vseedinstvo, originally conceived by Solov’ev, which implied that all created things are consubstantial with one another. Pavel Florensky’s methods of transcending causation and necessity in order to achieve this state, although couched in religious terms, bear strong resemblance to Bergson’s ideas of fusing intellect with intuition. Viacheslav Ivanov’s terms for describing the device of anamnesis, which he professed would aid the attainment of the same unified state, are even closer to Bergson’s. Ivanov visualized vseedinstvo as the confluence of the two rivers roia and antiroia, one of causality flowing from past to future and bearing our primordial memories, and the other advancing from the future to the past.

The remarkable cross-pollination that occurred in Russia between Nietzsche, Einstein, and Bergson on the one hand and the popular obsession with new communications and media on the other can be discerned fully in the poetics and aesthetics of Futurism. Manifestoes of the self-defined budetliane—who strove to embody the immanence of Nietzsche’s philosopher, “a man necessarily of tomorrow”—celebrated
the liberation of temporality from the stultifying perspective of rationalist determinism, offering original methods of creative intervention in both the everyday experience of time and the longer cycles of history and memory. Not coincidentally, science fiction emerged as an eminently suitable vehicle for disseminating glimpses of a world shaped by their radical approach.

Russian Futurists drew freely from science, technology, philosophy, and esoteric mysticism to construct a new cognitive matrix through which time could be viewed in various alternative ways. The 1913 manifesto “New Ways of the Word” (“Novye puti slova”) explicitly invokes Einstein’s relativity and employs Bergson’s term “intuition,” freely associating them with the temporal tricks of cinematic narration. It declares that the Futurists exercised a “higher intuition” of time to cognize the world, manipulating it at will and “observing it in reverse.” As a result, their aesthetics transcends the “three conventional dimensions of psychic life” and “celebrates its backwards movement.” Many elements of the manifesto were culled from the works of P. D. Uspensky, a philosopher with theosophical leanings who conflated Einstein’s notion of time as the fourth dimension of space with a mystical interpretation of Bergson’s intuition. Uspensky proposed an original way of solving “the riddles of history.” Based on Einstein’s multiple clocks, Uspensky claimed to have discovered a “higher intuition” residing in the “fourth dimension” of the human psyche. The moving camera provided Uspensky with one of his most powerful metaphors.52

A curious document links Khlebnikov, one of the authors of the manifesto, with Wells’s implementation of Einstein and Bergson. The British science fiction writer, who was well known in Russia for his pessimistic portraits of the future, declared in 1902 that his views on time had undergone a profound change. He attributed this radical reversal from pessimism to optimism about the future to the same revolutionary scientific discoveries, technological innovations, and philosophical reevaluations of temporality that the Russian Futurists were attempting to incorporate into their worldview. Wells declared his transformation from a prophet of doom into an activist for “inventing the future” — creative intervention in history — in a remarkable speech, “Discovery of the Future,” which was published in the scientific journal
Nature and reached the Russian audience through a translation published in Around the World.\textsuperscript{53}

Wells contended that only those who passively contemplate the dehumanizing effect of industrialization become victims of its tyranny. He declared that the dawn of the twentieth century, when science itself had overturned all canonical perspectives on time, was the ideal moment when creative individuals should turn their attention to its study. He distinguishes two types of minds according to their attitude on time and the “relative amount of thought they give to the future of things” (328). Invoking Nietzsche’s hatred for those who rely on the past to foresee the certainty of the future, Wells classifies the first type as “retrospective,” “legal,” or “submissive,” constantly looking for precedents. The second type he names “legislative,” “creative,” and “organizing,” a “masterful” type. Borrowing Nietzsche’s terminology again, he calls the second category “attackers,” a class of visionaries who destroy the illusions of causation (329). The second type, according to Wells, looks at time in a new way, liberating humanity from the yoke of external events and making man the master of his own destiny.

“The Trumpet of the Martians,” especially in its second part signed by Khlebnikov alone, states its objectives in exactly the same terms as Wells.\textsuperscript{54} The Russian Futurist urges his audience to renew the serious study of temporality, which was long obscured by the preoccupation with conquering space. While Wells distinguished “active” thinkers looking toward the future from “passive” thinkers looking toward the past, Khlebnikov names two categories, “usurpers” and “inventors”—preobretateli i izobretateli (322–23). By affixing the title “the king of time” to his own name, he affiliates himself with the second group (323). Khlebnikov named Wells and Marinetti as comrades-in-arms not only because they provided the apt symbol of Martian destroyers or defended a “new aesthetics of speed” to replace the “nostalgia” for an obsolete way of life. They are coupled as representatives of the second category of visionaries.\textsuperscript{55}

The measures that Khlebnikov proposes for reevaluating time and reinventing the future rely on the same techno-scientific and philosophical concepts invoked in Wells’s speech. Employing imagery that blends Nietzsche’s principle of eternal return with the cosmology of
the Upanishads, physical experiments involving radio waves, and Bergson’s description of time in flux—as an impossibly stretched vibrating elastic band—Khlebnikov outlined his plans for creating a future when destiny and mortality would become defunct (322). He extrapolated the visual impression of radio waves, which induces a thickened sensation of the present in the observer, to predict that human perception of time would expand and transcend its conventional petty dimensions. When humans develop the faculties of both “knowing” and “intuiting” time, Khlebnikov proclaims, death would become a “temporary dip in the sea of oblivion”—an obvious allusion to reincarnation (323). He overlaid the metaphor of the radio wave with the Upanishad’s description of the creator’s century-long blink of an eye, extrapolating that humanity would no longer be subject to a deterministic fate from birth to death when it learns to perceive the higher flux of time. “The Martians’ Trumpet” prefigures the embodiment of this future humanity in the trans-man, or zachelovek, liberated from the clutches of history, who shapes the boards (doski) of his own destiny (323).

KINGS OF TIME
TRANSCENDING MODERNITY THROUGH SCIENCE FICTION
Khlebnikov’s manifestoes offer both blueprints and interpretive tools for a series of inimitable fictional exegeses, composed between 1915 and his death in 1922, that outline a world conceived and constructed according to the richly textured principles examined above. “Our Houses and Ourselves” (“Doma i my”), “Radio of the Future” (“Radio budushchego”), “Swanland of the Future” (“Lebediia budushchego”), and “A Cliff from the Future” (“Utes iz budushchego”) are polymorphous sketches, straddling science fiction, policy initiatives, and architectural projects, in which Khlebnikov translated his manifestoes on temporality into the physical and cognitive dimensions of an imagined future.56

Written in an experimental language that Khlebnikov calls “lightning writing” (“iskropis’ma”), “Radio of the Future” describes how the radio would simultaneously allow humans to master time and perceive the true nature of its cosmic flux. Simultaneity and immateriality, two salient features of wireless communication, are mythologized in the figure of the “Radio-God” (393) dominating the postrevolutionary
landscape. This deity embodies a new kind of internationalism, whose vision of history is shaped not by a dominant ideology of modernity or anti-modernity but rather from dialogue and interpenetration between diverse approaches to time from around the world. Once “the soul of humanity learns to move together” (395), proclaims Khlebnikov, linear temporality would automatically become defunct. Not only do radio waves resolve the differences between public and private, national and transnational perceptions of time, but by transferring to human hands the power to create and control temporality, it also transforms the relationship with history.

“Our Houses and Ourselves” engages directly with Einstein’s conception of time as the fourth dimension of space. By employing architecture to convey and transform time, it depicts the replacement of enclosed “mousetraps”—bastions of past value systems that seemed impermeable to change—with open, flexible, and mobile dwellings (399). The demise of the static solid materials belonging to proshlevody, “pasters,” is accompanied by the inception of “house-automobiles” or “house-steamships.” A fast-flowing Heraclitean river of time flows past the imaginary city (403). Khlebnikov’s method of conquering death, which his manifesto claimed could be achieved if time were perceived as a wave and an eternal process of becoming, is embodied by the “creators and inhabitants of the future,” who immerse themselves in the “waves” of the river only to emerge as the quintessentially immortal “trans-man” or zachelovek (408). Nevertheless, the Futurist war on all established frameworks for anticipating the coming world was also the first celebration of its own impermanence. Accordingly, Khlebnikov self-consciously frames his projects as a parallel, shadowy, “cinematic” world subject to continual change, employing precisely the sort of rapid, radical transitions between frames and perspectives that constitute parallel editing and jump cuts (394). In “Our Houses and Ourselves,” the narrator muses that the destruction of Atlantis, far from being an event lost in ancient history, will befall even the most perfect civilization (409).

Revolution, for Khlebnikov as well as other creative interventionists, embodied a leap forward through time, a living incarnation of the sdvig that Futurists envisioned would liberate humanity from tradition and create the true subjects of history. Bogdanov’s Red Star, how-
ever, questions the foundational assumptions of such a future. It is worth noting that the very concept of a “Bolshevik utopia,” as Stites calls it, represents an anomaly according to classical Marxist thought. For Marx, workers embody the future, and action is to come from class-consciousness generated out of struggle with the present. Fictional extrapolations of the revolutionary future within such a paradigm were perceived to be ineffective or even delusional.

Bogdanov’s decision to compose precisely such a myth may well have been influenced by a fellow activist from France whose contributions to Russian revolutionary thought remain unexplored. The syndicalist Georges Sorel, who sought to augment scientific socialism with Bergsonian intuition, argued that extant discourses on the revolution missed the essential nature of historical change, which must be intuited in its durational flux. He found the European working class stopped in its revolutionary course, artificially frozen by an atomistic conception of change that obscured the essential indivisibility of the present and future. Sorel conceived of political action as theater and believed in the necessity of creating a sense of urgency, a movement toward a climax, which would give the workers a profound impression of revolution (106–13). He turned to Bergson’s *Creative Evolution* for devising a plan by which workers would intuit socialism as a whole, instantaneously, in the drama of a general strike. To get them to act, he suggested, leaders must create an “anticipation” (113) of the future in the form of a myth embodying their hopes. Sorel urged visionary leaders of the socialist movement to create exactly the kind of extrapolated narrative through which Bogdanov portrayed the future: “Without leaving the present, without reasoning about the future . . . we would be unable to act at all. Experience shows that the framing of the future, in some indeterminate time, may, when it is done in a certain way, be very effective” (124, emphasis in text). This was part of a new method for cultivating revolutionary action that Sorel called “social psychology” (125), which evolved into one of the cornerstones for Bogdanov’s thoughts as well.

Allusions to Sorel abound in the Russian revolutionary’s collection of essays titled *From Social Psychology (Iz psikhologii obshchestva*, 1904). Bogdanov’s view of history as constant flux strongly invokes Bergson’s stance against the atomistic perception of time and deter-
ministic analysis of history. Appropriating Sorel’s interpretation of Bergson, Bogdanov calls for cultivating the future “within” the worker, (“realizovat’ budushchee vnutri rabochego”). Bogdanov’s ideal of utopian literature reiterate Sorel’s call for an effective medium to make the workers “feel” (“oshchushchat’”) the coming world.58

A further motivation for Bogdanov’s literary efforts can also be traced to Bergson’s thought, which Sorel proclaimed would revise the very relationship between utopian imagination and action. Bergson linked the future intrinsically with freedom, and propounded an active mode of perceiving the present as already belonging to the future. According to the philosopher, we become freer the more we feel “our whole personality concentrate itself in a point, or rather a sharp edge, pressed against the future and cutting into it unceasingly.”59 Sorel used Bergson’s concept to criticize nineteenth-century scientific utopias, concluding that they did not adequately convey the experience of the future as contingent on revolutionary action in the present. His insistence on creating an inspiring vision of revolution stemmed from the fact that the numerous tracts and projects about socialism had failed to motivate the workers sufficiently. While the leaders were mired in endless analyses of the evils of capitalism, calculations of the benefit of socialism, and incantations of the inevitability of revolution, the masses did not possess the means to translate such “intellectual” analyses into an “intuitive” urge to change the course of history.60

At the very outset, Bogdanov’s *Red Star* provides a metatextual commentary on its raison d’être by acerbically dismissing the endless analytical speculations of socialist ideologues (24). Anna, the protagonist Leonid’s partner, represents such a theorizing intellectual, incapable of embodying the very principles she preaches. Naturally, she is not privileged with a direct experience of the future, which Leonid acquires on his journey through time and space. Sorel’s interpretation of Bergson—that the present should be represented as an inalienable component of the future—manifests itself in the subtle ways Bogdanov frames his utopia in the context of contemporaneous events. *Red Star* does not merely illustrate the projected benefits of socialism. Rather, Bogdanov utilized the fresh context of the 1905 Revolution as the backdrop of his novel, transforming the readers’ immediate present into Bergson’s “sharp edge cutting into the future.” The protagonist of *Red
Star is a revolutionary worker who has indeed perfected the Bergsonian synthesis of intellect and intuition. Cramped in the oppressive ranks of his comrades, who do not subscribe to the action-for-action’s-sake philosophy recommended by Sorel, he prefers to witness socialism “firsthand” (31). His journey across temporal, spatial, and finally—as his consciousness itself undergoes a profound revolution—cognitive barriers between Earth and Mars, sharpens Leonid’s “intuitive” understanding of revolution and constantly exposes the pitfalls of socialism practiced in his native Russia (31).

The unusual emphasis on harmonizing public and private time in Bogdanov’s projected ideal society also reflects Bergson’s and other turn-of-the-century philosophers’ active preoccupation with breaking the tyranny of the public clock. Extensive discussions of clocks and scientific management of time in the chapter “In the Factory” (“Na zavode”) reflects the Russian visionary’s horror of Taylorism, which he identified as the most harmful component of modern industrial civilization (63). In a later treatise on blood transfusion discussed at greater length in chapter 4, Bogdanov argued that the “psyche” of the worker atrophied along with his body when subjected to Taylor’s method of optimal and repeated action in a given amount of time. His own model of ameliorating the pernicious effects of scientific management is based on the autonomy of the worker over the standardized clock while accommodating the demands of a highly technologized society. Bogdanov’s Martian factory successfully balances a well-organized statistical system of demand and supply while offering full freedom to the workers to choose the time of day and number of hours they will work (something like the contemporary notion of “flex time”). The state, moreover, ensures that they devote an optimal amount of time on “private pursuits,” and change their jobs frequently to prevent the “atrophy” of body and spirit (65). The authorities plan to force one overzealous worker, who “insists” on spending six hours a day at his lathe, to turn to study and contemplation (66).

Bogdanov’s view of revolution as a perpetual forward-looking process of flux, infused with the anti-determinism of Bergson, demonstrates that a static end of history did not satisfy the visionary thinker. In his second extensive commentary on the literary catalysts of revolu-
tion, Cultural Tasks of Our Times (Kul’turnye zadachi nashego vremeni, 1911), Bogdanov added an exegesis about the continual reinvention of utopian myths. Far from regarding the socialist revolution as closure, he contends that the first triumph of the proletariat would only be the first step of a process wherein history and culture would need to be constantly rewritten. In the ethos of perpetual transformation, extrapolated narratives such as his science fiction would spring up time and again, providing new impetus for change. Like Nietzsche, who repudiated history as a bolster for the weak-minded, Bogdanov emphasizes that the future, however perfect it may seem, would not cease to need yet “newer histories” set forward in time. Bogdanov’s open-ended science fiction narrative, when interpreted in light of such arguments for unceasing creative intervention in history, reveals him rather as the disciple of Ernst Mach, the first scientist who challenged Newton’s concept of “absolute” time and suggested the existence of multiple temporal reference systems. As Lenin’s vituperative comments about both Mach and Bogdanov’s “mysterious vision of time and history” show, the novelistic window of contingency did not conform with the Bolshevik leader’s vision of the end of history.62

While Bogdanov experimented with expanding the very paradigms of socialist utopia, his contemporary science fiction writers could not foresee an impending Bolshevik revolution accommodating private time or individual interiority. Nikolai Fedorov, a namesake of the influential philosopher, elaborated a possible negative consequence of the socialist production system that Bogdanov hints at and rejects vehemently. The protagonist of Red Star presupposes that free love and communal child-rearing in an egalitarian sociopolitical structure also entails state-regulated procreation. His interlocutor, the Martian Enno, challenges him with the sobering thought that any system that tampers with the “flow of life” and the rhythms of emotion between two emancipated individuals cannot be worthy of socialism’s lofty goals of restoring dignity to its subjects (85). Fedorov’s novella An Evening in 2217 (Vecher v 2217 godu, 1906), also composed in the shadow of the 1905 revolution that forms the backdrop of Red Star, darkly foreshadows a future state “ruled by the majority” (gosudarstvo bol’shinstva) that compliments itself on violating all private notions of time,
especially those pertaining to procreation. In Fedorov’s negative projections of an egalitarian state, the organic cycle of birth, reproduction, and death has been replaced by strictly calculated timetables of industrial economics. Its “Supreme Council” revels in the way private history has been reduced to clockwork: “How mechanically humanity is born and how mechanically it dies!” (22). According to the strictest principles of utilitarian rationality, the mechanical clock eliminates experience and emotion, the seat of Bergson’s “intuitive” faculties of perceiving time. Private history, consisting of love, family, or kinship, becomes a remote object of intellectual curiosity in such a world, whereas creating and nurturing life are relegated to a mechanical assembly line.

An exceptional female citizen who defies the public timetable of creating life stands at the center of Fedorov’s tale. It is through her eyes that the reader is introduced to the tyranny of the unseen giant clockwork. Numbers rather than names reduce women to bodies producing scarves, macaroni, or children. Watched by the unseen clock, they are sent to procreate, “to fulfil their social duty,” as soon as public arbiters judge their physiology mature (24). A woman withholding reproduction when she reaches her sexual prime or refusing to join the “labor army of mothers” is severely ostracized by the collective (23). Although the protagonist of 2217 resists the ultimate form of dominance exerted by the clockwork state, she finally succumbs to the timetable it enforces on its citizens’ life. The night after completing an assigned tryst, however, she encounters a representative of the “anarchists of individualism” (26). The name of his movement doubly symbolizes its aims: to undermine the rational ordering of history and to rehumanize the individuals of a faceless collective. The anarchists’ goals consist of restoring the value of private time, freeing the individual from the yoke of the industrial clock, and allowing him to pursue a life apart from the assigned assembly line. The encounter revives dormant memories of individual history that were miraculously retained in the female “number’s” brain (67), but the brief romantic interlude that follows, itself a forbidden act, ends in tragedy. When the protagonist learns of the anarchist’s only expectation—that she not surrender her body to the scientifically managed cycle of life imposed by the state—she throws herself from the platform of an “aircraft station”; the precisely timed quarter-
hour news bulletin, projected on giant electronic screens inscribed with a clock, announces her anonymous death to the world (69).

Although written long before 1917, Fedorov’s work anticipates the veritable fetish of Taylorism and Fordism among the revolutionary elite in Bolshevik Russia. The alternatives represented in his science fiction also place Fedorov firmly among later iconoclasts who repudiated the hegemony of public time and actively resisted all forms of deterministic closure in their imaginations of the future. Comparing Fedorov’s narrative with Zamyatin’s famous _We_, one cannot help but conjecture a direct textual influence. Morson dubbed _We_ a parody of all scientific utopias epitomizing a temporally “closed” narrative and depicting the “uchronic” end of history. His definition of parodic subversion can be extended to Fedorov’s science fiction as well. In comparison with Fedorov, however, Zamyatin’s dark tropes of temporality derive from their literal enactment in his milieu. By 1920, Fedorov’s worst speculation—that socialism would devolve into a reincarnation of industrial clockwork ethics, and subsume even the most intimate facets of private history—was being propagated as the normative ethical and aesthetic model for a society oriented toward the Communist future. Zamyatin’s protagonist describes himself as “a chronometrically exact, gleaming mechanism without a single speck of dust,” literally personifying a slogan attributed to Lenin: “Let us take the storm of the Revolution in Soviet Russia, unite it with the pulse of American life, and do our work like the chronometer!”

In the wake of the October Revolution in 1917, numerous economic and social theorists tried to translate Lenin’s slogan into reality. Scientific socialism provided the frame for conceptualizing the proletarian state as a seamless collective of mechanized humans. Numerous industrial psychologists and psychotechnicians attempted to cultivate collective consciousness by synchronizing industrial labor. Their goal was to divest the worker of the last shred of individual identity, let alone allow for the freedom and respect for private time that Bogdanov so optimistically portrayed. As many scholars have noted, the title of Zamyatin’s novel as well as its central theme was inspired by none other than Gastev, director of the Central Institute of Labor and a chief proponent of Taylor’s scientific management. Gastev triumphantly declared that the common temporal rhythm of assembly-line life would
change even self-reference among the proletarian collective: individuals would call themselves “we” instead of “I” and respond to numbers instead of names.66

Like Fedorov’s heroine, a chance encounter with a member of the opposite sex permanently disrupts the perfectly programmed D-503, the protagonist of We.67 Not only does the all-too-human body of I-330 not conform to the clockwork perfection of the other numbers, but she also introduces the forbidden elements of contingency and indeterminacy in their relationship. Once D-503 breaks the rule of regulated intercourse and succumbs to her manipulation of “personal hours” (6), she encourages him to experience time in a way that is strictly taboo. By arranging trysts at the “Ancients’ House” (25), she cultivates an appreciation of memory in him—a strictly censured action in the eyes of a state that operates on collective amnesia. Indulging in a positive view of the past leads him to adopt an alternative view of time itself. The rebellious I-330 opens the protagonists’ eyes to the existence of parallel dimensions of temporal reality, which forever destroys his faith in an “objective” absolute conception of time. The former faithful servant of rationalist determinism reaches the conclusion that a preordained “scientifically charted” history is merely one interpretation of lived temporality, and by far not the most desirable. Thus Zamyatin posited the femininized irrational perception of time as the most potent weapon against imposed determinism and symbolized it as the fountainhead of creative intervention in history. Under I-330’s leadership, the male protagonist joins the “Mephi” or “devils” in their protest against the false utopian order of One State.

In Zamyatin’s novel, the female body serves as the repository of contingency, flux, and duration. Whereas Fedorov’s story concludes with the suicide of the female protagonist, We depicts the death of I-330 through the biblical image of an electrical crucifixion imbued with the potential of resurrection. But she is unexpectedly replaced by O-90, the protagonist’s state-assigned partner. This second female figure breaks the most symbolic hold exerted by the state over private time. Not only does she defy eugenics by refusing to destroy her child—“inadvertently” and “irrationally” conceived with D-503 (157)—but also escapes beyond the physical boundaries of the One State. O-90’s unborn child, which has received little attention in the extensive schol-
arily literature devoted to We, provides far more than an ideological counterpoint to seamless totalitarian order. Created in defiance of the public clock and destined to be free from the closed space-time of One State, the indeterminate future of the child-figure becomes a declaration of survival for the writer’s own means for creative intervention in time.

Zamyatin espoused the same scientific principles and technological innovations that inspired the Futurists’ efforts and inspired Bogdanov’s critical utopia. Relativity, which forms the basis of D-503’s epistemological rebellion against the “closed circle” (172) of officially mandated history, appeared in his essays time and again. In terms strongly evocative of Futurist manifestoes and science fiction, Zamyatin celebrates “speeding cars, airplanes, flickering lights, dots, dashes” (108) not as metaphors of modernity’s disciplinary order but instruments for revealing the true nature of time as a continual process of becoming. He adopts a “synthetic” perception of temporality as the cornerstone of his aesthetics: “A literature that is alive does not live by yesterday’s clock, nor by today’s, but by tomorrow’s” (109). Zamyatin came to conceive of literature as an active instrument for creative intervention in history, affirming the transience and impermanence of all empirical, objective, and “rational” (86) conceptions of temporality. He proclaimed a literature gifted with such a perspective on time as a liberating force. The formal characteristics of his novel—“volatile, elliptical language” and “sharp, synthetic” (88) multivalent images that Zamyatin claimed were products of his new synthetic view on time—exemplify his aesthetic rebellion. In a cultural atmosphere where life and art were increasingly driven to perpetuate a preconceived notion of “scientific” and “rational” utopia (284), his novel affirms the power of creative intervention. The immanent life in the womb undoes a future that is also the end of history.68
Generating Power

“Communism is equal to Soviet power plus the electrification of the entire country” (Kommunizm est’ sovetskaia vlast’ plius elektrifikatsiia vsei strany). These were the terms in which Lenin reportedly conveyed the Party’s approval of the plan forwarded by the newly formed State Commission for the Electrification of Russia, abbreviated as *GOELRO*, in November 1920. Still standing in tall letters above Moscow’s central electric station, the slogan remains graven in collective memory as the iconic moment when electric power became the officially designated driving force of utopia. Lenin’s pronouncement was striking not because it selected technology as the primary means to shape Russia’s revolutionary future. During years of exile in European cities, the Bolshevik leader arrived at the conclusion that the technological foundations of capitalism needed to be appropriated in order to build a twentieth-century workers’ state.¹ It is the choice of electrification above all other sectors that seems particularly daring.

While commercial promotion and cheap mass distribution had domesticated and demystified electricity in countries like Germany and the United States by the first decade of the twentieth century, “electrification of the entire country” in the Russian context could only be called a pipe dream. In the West, Thomas Edison’s light bulbs and Siemens dynamos changed everyday life, radically affecting the length of the workday, the nature of private and public space, and the duration and forms of leisure.² In contrast, as late as 1919, a commissar of the Bolshevik government noted with trepidation that the number of electric stations in Russia and the United States were 220 and 5,221 respectively, while the consumption of electrical energy in kilowatt-hour per capita was 16 and 500.³ Even biased retrospective assessments of Russian techno-scientific achievement, such as those found in the *Great Soviet Encyclopedia* of the Stalin era, admitted that “the production and
consumption of electricity” remained “one area in which Russia visibly lagged behind until the late 1920’s.” In a historical study of electrification in Russia, Jonathan Coopersmith notes that even after the First World War had convinced the imperial government to recognize the importance of electrification, efforts to promote and distribute electrical energy were “extremely slow.” After 1917, furthermore, “electricity production dropped sharply and did not gain pre-Revolutionary levels until the mid 1920’s.” Assessing Lenin’s slogan against the objective conditions of electrification in Russia, Stites concludes that it was “a desperate measure to make the economy work and the Soviet regime survive.”

Historically, therefore, the great disjuncture between Lenin’s vision and the actual state of electrification in Russia was quite evident. Why, then, would his statement about electrification above all others be singled out for immortalization? A closer reading of the famous pronouncement reveals the sources of its unprecedented rhetorical force. Through a particular sleight of signification, the slogan imbued a technology that was virtually nonexistent in everyday Russian life with tremendous symbolic power. The first step in this process was to use the seemingly infallible scientific diction of “equal to” and “plus,” which lent the dream of electrification an aura of inevitable prophecy. Far from confirming a self-evident scientific truth, however, the mathematical formula for communism only served to dissociate electric power from the slow, contingent processes of actual technological development. Placed on the same side of the equation as Soviet authority, electricity became a supplement to ideology, an agent of metaphysical rather than material change. “Electrification of the entire country,” consequently, evolved into an indispensable metaphor for erasing the gap between the imperfect present and a future beyond history.

The strategy of conflating two diametrically opposite connotations of electricity within the same mathematical paradigm provides the key to understanding the power of Lenin’s slogan. It unerringly taps the very node that made electricity the most marvelous artifact of the scientific and technological revolution at the turn of the twentieth century. Contrary to the dominant scientific principles of the Enlightenment, electricity defied empirical observation and eluded mechanical explanations of energy. Unlike wood, coal, or oil, it was a form of energy
rather than a material source of power. Unlike gas or steam, moreover, its production was invisible to the human eye. The epistemological implications of generating electricity, therefore, were just as revolutionary as its physical uses and its potentials for social transformation. The electrifying effect of Lenin’s slogan derived from embodying and enacting the very synthesis of matter and mystique that electricity itself represented.

Scholars have interpreted Lenin’s call for electrification as the genesis of a unique Bolshevik idiom of technological utopia. This chapter argues that it signaled the culmination rather than the origin of a particular narrative of modernity. The synthesis of electricity’s material and metaphysical potentials was not the product of Soviet rhetoric alone. It was codified, popularized, and perpetuated well before the October Revolution and would continue to play a potent role during the actual electrification of Russia in the decade following Lenin’s famous pronouncement. Science fiction, a genre seldom associated with politics or policy, provided the crucial discursive site at which the two connotations of electric power were first unified and amplified into a grand paradigm of collective salvation.

This paradigm may be understood through the analogy of an electrical circuit, which consists of a positive pole called the anode and a negative pole called the cathode. In isolation, the two remain inert, but once conjoined they produce a blinding spark. The anode, conventionally labeled the male part of the circuit, corresponds to the positivistic understanding of electricity. In the anodic mode, electricity is a rationally explicable source of power that can be mechanically harnessed and used in material ways. The female cathode, in contrast, represents a distinctly nonrational approach toward electricity as an organic or supernatural form of energy. Incommensurable with human cognition and insurmountable by human prowess, electricity in this second mode remains a sacred repository of magic and miracle.

Heidegger’s two-pronged model of technology provides a rich framework for assessing why the synthesis of the anodic and cathodic modes electrified the Russian imagination in particular. According to Heidegger, the Greek root *techne* stands for both *instrumentum*, “a means,” and *episteme*, “knowing in the widest sense.” As the modern usage of the term is limited to the first meaning, technology has be-
come nothing more than a brute instrument for wielding power. This strikingly Fedorovian critique by a philosopher who witnessed the horrors of industrialized warfare in the twentieth century is followed by an explanation of what technology was originally meant to be: a great synthesis of instrumentality with knowledge in the widest sense. Infusing the machine with ways of knowing transforms technology into a source of poesis, “something that creates or brings forth.”

It is precisely the promise of poesis, of generating something new, that imbued Lenin’s slogan with tremendous symbolic valence. Pro/creation also provides the paradigm of synthesis through which this chapter reveals the continuities between a rich corpus of electrical fiction and the 1920 call for electrification. The representations of electricity examined in the following sections responded to a particularly gendered view of Russia’s relation to modernity. Russia, which constituted the backward, feminine other half of a masculine, advanced West, was correspondingly associated with premodern, nonrational approaches to technology rather than mastery over its mechanical manifestations. The cathodic episteme associated with Russia transformed electricity, the primary driving force of modernity in the twentieth century, into something greater than Heidegger’s instrumentum or Fedorov’s prosthesis.

Paradoxically, the physical absence of electric power in everyday Russian life left electricity itself wide open for interpretation. As a result, writers, artists, and thinkers could envision the synthesis of the anode and the cathode in ambitious ways that were unconstrained by the material exigencies of technological modernization. Science fiction, not surprisingly, became the privileged mode for translating the completed circuit of electrical dreams into a uniquely Russian model of development that I call “ethical modernity.” This model invested the material transformations wrought by electric power with a deep social awareness of Russia’s own internal schisms between the city and the country; industrial and agrarian economies; and most significantly, a small urban elite with access to technological comforts and the vast provinces deprived of the benefits of modernity. By the time Lenin issued his call for electrification, science fiction had codified a variety of ethical modernities based on the physics and metaphysics of electric power.
ELECTRIC ORIGINS
THE ANODE AND CATHODE OF ETHICAL MODERNITY

Long before Thomas Alva Edison’s light bulb changed night into day and ignited the imagination of the world, electricity constructed an unusual bridge between scientific knowledge, social awareness, and literary creation in Russia. The historical figure who embodied this bridge was Mikhail Lomonosov, the visionary thinker from the eighteenth century who was canonized as both the father of modern scientific education in Russia and a pioneer of modern Russian poetry. Just as Lenin became the icon of the national electrification drive in Soviet Russia, Lomonosov’s name was inalienably bound with the scientific perception of electricity as a tractable natural phenomenon. In a famous plea to develop institutions of higher learning in Russia, Lomonosov, who experimented with capturing lightning just like Benjamin Franklin, used electricity as his primary metaphor. The petition, composed in 1752, was couched in the form of an ode titled “On the Uses of Glass” (“Pis’mo o pol’ze stekla”). Describing the source of energy that best captures the spirit of modern science, he turned to the profound transformation in perceptions of lightning during his own lifetime:

That which stunned the people of antiquity,
That which burns, boils, flows and shines as God’s wrath,
And took away devotion from other Gods [. . .]
Others, who at least wished to know what could be wrested from
the heavens,
Created Prometheus in their dreams,
Who tore fire away and put it in the hands of the dying.9

Although Lomonosov counted himself among the “others” in the middle of this passage, his rendition of the Prometheus myth adds an unexpected dimension to the well-known story. The poet redeemed the transgression of Zeus’s son, who stole fire from the heavens and handed it to earthly mortals against his father’s wishes, by depicting him as an agent not only of progress but also of resurrection. By transforming molniia—the Russian term for lightning that traditionally signified both divine power and divine retribution—into a source of life for humanity on the verge of annihilation, Lomonosov imperceptibly
introduced a potent cathodic element to the modern project of understanding and subjugating heavenly wrath.

The implications of this synthetic figuration become clear in the seminal essays he published between 1745 and 1756 on the physical science of electricity. In these treatises, he framed the task of bringing the metaphorical fire of the Enlightenment to Russia’s dark landscape of backwardness with a socioeconomic imperative that stretched far beyond the confines of university education. Lomonosov combined his discussion of Western-style scientific training in the city with a broad vision of Russia’s agrarian countryside, where random vagaries of the weather literally broke the will of peasants already exhausted from hard labor and hunger. Understanding molniia, lightning, was therefore the first step toward accessing an eternal fountainhead of energy that would literally bring his starving countrymen back from the dead.  

Lomonosov’s inimitable fusion of the physics of electricity, social justice modeled on Enlightenment thought, and the spiritual connotations of resurrection made him an iconic figure for later writers and activists such as Alexander Radishchev. Radishchev, whom Catherine the Great personally condemned in 1790 for publishing a searing critique of social inequality in a travelogue titled A Journey from Petersburg to Moscow (Puteshchestvie iz Peterburga v Moskvu), concluded his observations on the Russian countryside with a biographical sketch of Lomonosov. Echoing d’Alembert’s portrait of Franklin, who “tore lightning from the heavens and the scepter from the tyrants,” Radishchev militantly called for keeping his legacy alive. By characterizing Lomonosov as someone who “produced flashes of lightning and repelled lashes of thunder,” Radishchev not only conflated the visionary with the mythical figure of Prometheus. His predecessor represented a specifically Russian model of enlightened intellectual whose pursuit of knowledge was not limited to the elite institutions of the city. In Radishev’s view, the fiery urge to instantly improve the lives of the dispossessed set Lomonosov apart from Western pioneers of scientific thought.

Although progressive Russians would continue to venerate the Lomonosovian tradition, a completely different view of electricity took Russian intellectuals by storm in the early nineteenth century. The
pendulum swing owed much to the avid interest with which urban Russians followed the trends of life and thought in Western Europe. Starting in 1780, the scientific community and social elite in France, Germany, and Britain became obsessed with Luigi Galvani’s discovery that two pieces of dissimilar metals could make a dead frog twitch even in the absence of a source for electricity. Galvani’s claim that electricity was of biological rather than physio-chemical origins rapidly acquired a life of its own. Within a year of his discovery, the physician Franz Anton Mesmer advanced the theory that a unified electric field connected the physical world with the human mind, and that thoughts could be manipulated by exposing the body to electric currents. The most infamous application of Mesmer’s theory was the bathtub of shock therapy, where female patients diagnosed as hysterical would receive electric currents to cure their illness. Apart from this particularly feminized form of electric therapy, the combined legacies of Galvani and Mesmer generated a plethora of parapsychological and occult understandings of electricity.

Encyclopedias, government bulletins, and newspaper articles from nineteenth-century Russia demonstrate that the cult of Galvani and Mesmer had irrevocably converted even the scientific community that Lomonosov had helped to establish. An *Encyclopedic Dictionary (Entsiklopedicheskii leksikon)* of 1838 contains a detailed entry on galvanism, written by the physicist E. Kh. Lents. According to a bulletin issued by the Ministry of Education, Lents secured his place at the university by conducting public experiments in electro-psychical phenomena. The eminent scientist F. A. Preobrazhensky published an article in the Petersburg *Journal of Manufacturing and Trade* about a member of the Imperial Academy who had succeeded in constructing a *perpetuum mobile* with galvanism as its driving fuel. The *perpetuum mobile*, an imaginary machine that runs without any visible source of power, added a particularly provocative cathodic dimension to electricity. It was an instrument envisioned by medieval alchemists, who also pursued the elusive goals of fabricating the philosopher’s stone, a material created from fire that would turn any base metal into gold, and the elixir of life, which would rejuvenate the dead. The resurrection of the *perpetuum mobile* in conjunction with electric power also imbued it with the potentials of transfiguration and resuscitation.
As evident from Mary Shelley’s *Frankenstein*, which is considered to be one of the first texts of modern science fiction, the combination of alchemic transfiguration and galvanic-mesmeric conceptions of electricity resonated particularly well with the ideology and aesthetics of Romanticism. A number of scholars have pointed out, moreover, that the electrifying effect of *Frankenstein* also derived in no small part from the fact that all its so-called scientific components were associated with femininity. Unlike Radishchev, who commemorated Lomonosov as a hyper-masculine modern-day Prometheus, Shelley’s contemporaries in Russia, Alexander Pushkin and Nikolai Gogol, also turned to its cathodic, alchemic perceptions for articulating the elusive process of literary creation. The terms galvanism, magnetism, and mesmerism thoroughly permeated their vocabularies of aesthetics and affect. In a pioneering exegesis on the dramatic arts called “Theatrical Digressions” (“Teatral’nyi raz’ezd”), composed between 1836 and 1842, Gogol compared the formal features of a play with a perfect machine, but its essence, the ineffable “soul” of the work, with galvanism. Invoking the implementation of mesmerism in psychological treatments, he instructed actors of his famous play *The Inspector General* (*Revizor*) to transfix the audience with a mysterious “shock.” Pushkin explained the process of poetic creation through a more elaborate and explicit metaphor in an essay titled “Refutation of Criticism” (“Oproverzhenie na kritiki”), published in 1830. The constituent parts of language, he argued, represented the inert poles of an incomplete circuit, and epiphany occurred when the masculine verb penetrated the feminine noun. As the dead noun came alive, language itself would be reanimated with a “magnetic charge.”

The electrical metaphors of Pushkin and Gogol, in turn, closely echoed those used by German Romantics. Both E. T. A. Hoffmann and Johann Wolfgang von Goethe interpreted electricity as the tangible manifestation of the Neoplatonic doctrine of innate sympathies. The intimacy and urgency characterizing the Russian writers’ representations of creative genius recall Hoffmann’s story “The Magnetizer” (“Der Magnetiseur”), published in 1826, in which the protagonist draws out all the rays from inside his beloved and weaves her into his self. Gogol’s paradigm of communication and Pushkin’s image of language coming alive resonate remarkably with Goethe’s pronounce-
ment in 1830 that “We all have some electrical and magnetic forces within us; with lovers this magnetic force is particularly strong.” As an incident in Tolstoy’s novel *Anna Karenina* demonstrates, electricity continued to be associated with female sexuality and discussed as an occult phenomenon late in the nineteenth century. In a charged moment of ideological and emotional confrontation, the rationalist hero, Levin, accuses his beloved of indulging in table turning and mediumism. His rival Vronsky retorts, “We acknowledge the existence of electricity, even though we do not know it; why can’t you admit there may be other sorts of energy that we have not yet named?”25

Science fiction provided the first platform for bringing together the anodic and cathodic, Enlightenment and Romantic approaches to electricity. In *4338*, Odoevsky explored the intellectual and cultural implications of synthesizing the Lomonosovian vision of socially conscious modernity with the contemporary cult of Galvani and Mesmer. The most remarkable feature of his work is the presentation, avant la lettre, of a distinctly technological understanding of electricity. Long before light bulbs and dynamos made mass electrification a viable idea, Odoevsky’s science fiction portrayed a society whose public sphere and private life had been completely transformed by electric power. The physical act of harnessing lightning, which Lomonosov had deferred to an unspecified future, emerged in *4338* as a goal accomplished on a massive scale. St. Petersburg in the novella looks like a “city of lights” (418) with “electric lamps shining through every crystal window” (421). “Galvanostats,” balloons powered by electricity, provide public transportation, while the “magnetic telegraph,” resembling our contemporary electronic mail, has replaced writing letters (448).

The narrator, who sends dispatches to China about the world’s new “center of power” (420, 441) via this futuristic medium, connects energy, political economy, and the spatial history of modernity in an uncannily twenty-first-century diction. In both the literal and figurative sense, the narrative builds up a strong causal connection between electrification, modernization, and geopolitical authority in the future world. While the Orient pays homage to its superior Russian counterpart, Germany and the United States are described as inhabitable “areas of darkness” (447). Tsungiev explains that these “older civiliza-
tions” collapsed at the point when Russia discovered the “power that drives both machines and intelligence” (432).

Electricity, however, also provides the governing metaphor for the particular way in which Russia employs technology in 4338. Tsungiev notes that unlike Europe, Russia has approached machines in an “Eastern way” (431). Electric power functions not just as the material driving force for its civilization, but also plays a defining role in “improving the moral fiber” of the ruling class and the intelligentsia (431). The dual role of electricity in Odoevsky’s imagined Russia becomes evident in the central chapter of the novella, where the Chinese visitor is taken to a social gathering in a Petersburg mansion. A collective immersion in magnificent “magnetic baths” provides the high point of the party, whose purpose is to “flush out crass materialism and corrupt thought” (432). Cabinet ministers, scientists, writers, and artists alike emerge from the tubs in an exalted state of consciousness (433). The baths, which in Odoevsky’s science fiction exemplify a crucial way in which Russia eschews the frivolous consumerism of Western modernity, are none other than the Mesmeric cabinet tubs used to cure mental illnesses in nineteenth-century Europe.

In Odoevsky’s utopia, therefore, dispelling physical darkness and propelling transportation and communication remain meaningless until they are animated with a distinctly cathodic application of electricity. The fusion of its material and epistemological potentials, in fact, constitutes the foundation of an entirely different way of being in the world. This principle, called “New Enlightenment,” eschews the notion that rationality alone can serve as the basis of knowledge and action. The elites of St. Petersburg in 4338 explain to the visitor that the mesmeric bath is the ideal instrument for transforming a merely enlightened human being into a product of the New Enlightenment (434).

Odoevsky’s philosophical writings provide an elaborate gloss of this intriguing term. In an unpublished essay titled “Electropsychical Phenomena” (“Elektropsychicheskiiia iavleniia”), he welcomed the advent of a technological means through which the modern, scientifically oriented mind could begin to comprehend what lay beyond empirical observation. According to Odoevsky, electricity was the only medium for
virtually electromagnetically proving the opposition between mind and matter, reason and intuition, because it “merges our inner world with the outer environment.” “In the highest state of magnetization,” he contended, “pure instinct and pure reason come together.”

**VIRTUAL ELECTRIFICATION**

**SCIENCE FICTION IN THE AGE OF EDISON**

Odoevsky’s unique embracement of the anodic and cathodic potentials of electricity remained an isolated instance of visionary thinking for the next two decades. A single innovation, Edison’s light bulb, catapulted this novel source of energy into a worldwide object of speculation. Electric power, which promised to change night into day, revolutionize communication, and radically affect systems of production and consumption, emerged as the ubiquitous icon of modernity in the last decade of the nineteenth century. The media was instrumental in introducing the term “electricity” to the popular lexicon in Russia. Popular science journals such as *Around the World*, which included Edison’s lamp on its cover, and *Nature and People*, which featured a sky filled with electric wires on the cover of an issue in 1895, literally adopted the incandescent bulb as their emblem. An image of the light bulb appeared at the head of a regular column in *Around the World* that reported the latest scientific discoveries and technological inventions. Specialized periodicals soon sprang up to inform the amateur reader about electrical energy. The inaugural issue of *The Journal of Latest Discoveries and Inventions* in 1900 offered two free supplements titled “Electricity as Progress” and “Electricity in Domestic Use.” All through the same year, *The Field* carried numerous articles and pictures of the special Electricity pavilion at the World’s Fair in Paris.

As evident from the examples cited above, the enthusiasm of the Russian media about the transformative effects of electricity closely echoed its Western counterparts. But the resemblance ended there, because electricity did not leave the domain of representation to become an object of everyday life. Coopersmith notes that although individual engineers and investors at various times pushed for adopting the new source of energy, a rigid centralized system of promoting and developing new technologies prevented its application except for a few isolated urban landmarks. In contrast with railways, for example, the imperial
government did not deem the generation of electric power strategically important until it was proven otherwise in the First World War (140–42).

Consequently, the readers of newspapers and magazines were well aware of electricity’s transformative potentials but unable to experience it firsthand. Even as advertisements for incandescent lamps, phonographs, and radios lured the public, the products themselves remained prohibitively expensive. An electric lamp advertised in The Field in 1910, for example, cost forty rubles, while an Edison phonograph was billed at seventy-five. As for electrification in public space, the limited import of generating equipment and its very selective use failed to dispel the illusion that electric light was as immaterial as electricity itself. An interesting compendium of advertisements from 1900 illustrated the glaring gap between imagining and implementing electric power. Three different varieties of lamps appeared on the same page of The Field. The most prominent advertisement, occupying about a quarter-page, declared: “Light for the Twentieth Century: Kerosene Lamp Orsa.” The next box also touted a kerosene lamp manufactured by a Russian company called the Triumph. Whether in terms of size or strength of rhetoric, the least conspicuous advertisement was for the electric lamp, which was relegated to the very bottom of the page. Even at the threshold of the twentieth century, kerosene remained a far more tangible source of light in Russia’s capital city than the foreign miracle of the incandescent bulb.27

Borrowing the parlance of our times, it might be said that electricity enjoyed a peculiar virtual existence in Russia. Although the media was flooded with its representations, material manifestations of electric power remained purely hypothetical and deferred to an unspecified future. A comparison with the rapidly changing discourse about electricity in the United States underscores its peculiar status in the Russian context. In 1890, Mark Twain referred to the new source of energy as “a splendid necromancy of modern science.” But whereas a mere ten years later the same author could describe how it “lights up the home” and “extends the day long into the night,” Twain’s epithet of “necromantic science” held true for Russian perceptions of electricity well into the revolutionary period.28

Since the “necromatic” aspect of electricity bore little relation to
actual developments in technology and industry, Russian magazines and newspapers regaled their curious readers with a panoply of magnetic, galvanic, and mesmeric phenomena readily available at their doorstep. Classified columns announced mesmeric séances, aided by electric shock, organized in the homes of prominent families. The Petersburg Stock Exchange News (Birzhevye vedomosti) carried at least ten daily notices from clinics specializing in electrotherapy for mental problems. In 1899, Nature and People published a report about a certain “Miss Volta,” who effected miraculous cures with her “personal electrical aura.”

An iconic illustration of virtual electrification may be found on a page containing two articles about electricity in a 1900 issue of The Field. The top half of the page is dedicated to the centennial of a landmark event in the history of science. In 1800, the Italian physicist Alessandro Volta debunked Galvani’s claim by constructing the first prototype of storage batteries out of acid-coated metal plates. Volta demonstrated that the frog’s galvanic twitches originated from chemical reactions between bodily fluids and the metal electrodes that Galvani placed on its feet. Right below the story of Volta’s triumph appeared a sizeable feature about a pair of magic healers who could not only light cigars and lamps from the “electrical tips” of their fingers, but also bring dead bodies to life.

Imagination, therefore, was the only platform for articulating the possible effects of electrical technology on everyday life. Detailed, elaborate narratives about the projected forms and functions of electricity appeared in the guise of science fiction, whether identified as such or clothed in the mantle of millennial eschatology and modernist manifestoes. Electricity in Russia was nationalized through the frame of science fiction long before it could be materially domesticated.

Narratives extrapolating electrical technology attempted to resolve the split in media representations of electricity. An acute awareness of Russia’s backwardness, in which kerosene still reigns as the fuel of the impending twentieth century, formed the backdrop of anxiety to the science fictional mode of envisioning the forms and functions of electric power. Consequently, the cathodic representations readily available to the Russian public—Miss Volta, Galvanic healers, shock therapy, and mesmeric séances—constituted an integral part of such
speculative portraits. The democratization of electricity—if only virtually—nevertheless conferred a qualitatively different character to science fiction of the post-Edison period as compared to Odoevsky’s prescient portrait of an electrically transformed capital city. From the 1890s onward, the Lomonosovian agenda of rural plight returned as a prominent concern, and electrification became as much an instrument of societal reconstruction as epistemic reconfiguration. The orientation of science fiction, correspondingly, shifted overwhelmingly to Russia’s vast internal “darkness,” its provincial towns and countryside excluded from the urban electrical dream. The cathodic mode, however, was always implicitly present.

Recuperating nineteenth-century figurations of electricity as a vitalist force of creation and healing, science fiction integrated Pushkin and Gogol’s models of poesis into a new national idiom for the rapidly modernizing twentieth century. While in Odoevsky’s work the synthe-
sis of anodic and cathodic applications sustained an ethical class of innovators and administrators, at the cusp of the twentieth century electricity evolved into a consummate means for transfiguring the entire population. Commensurate with this democratic impulse, a new character type emerged as a stock element of science fiction. Electricity became the special area of expertise for a particular brand of Russian scientist or engineer, who, whether by virtue of his background or his chosen field of work, bridged the city and the country, institutional training and populist intuition. Corresponding with the gap between speculation and reality, moreover, this central figure privileged the new synthetic model of knowledge symbolized by electricity.30 

Ethical and epistemological change became the primary functions of electric power in the realm of the imagination. A story published in 1898 by Konstantin Sluchevsky, a prominent metaphysical poet of the fin de siècle, serves as a representative example of the new kind of electrical science fiction that emerged in Russia during the decade following Edison’s invention. “Captain Nemo in Russia” (“Kapitan Nemo v Rossii”) employed electricity to articulate an overt literary and ideological response to Western modernity’s functional relationship with science and technology. In Sluchevsky’s story, Verne’s famous hero travels to a remote island on the White Sea, where a Russian is said to have created lush farmlands out of frozen Arctic wastes. What sets Nemo and the protagonist apart is precisely their relation to electricity: while the Frenchman uses electric power only to run his personal submarine, the Russian, literally reincarnating Lomonosov, reinterprets the eighteenth-century visionary’s broad view of social transformation within the uniquely Russian understanding of electricity at the turn of the twentieth century. In a striking biographical correlation with the eighteenth-century scientist, Sluchevsky’s hero lives on an island close to Lomonosov’s hometown, Arkhangelsk. His visionary thinking and scientific activities, however, are shaped by an unprecedented conjuncture between the social consciousness of the Enlightenment and electricity’s cathodic perceptions in early-twentieth-century Russia.

Rather than harnessing electricity to satisfy his individualistic wanderlust, the Russian inventor utilizes it for alleviating two existential concerns of the local peasantry, lack of food and the absence of educa-
tion. As climate control enables local farmers to produce bumper crops during the day and study by Edison’s bulbs at night, electricity evolves into a force that simultaneously resurrects the body and kindles the mind. Introducing his gifted assistant to Nemo, the protagonist wryly observes that he is not of French or British origin as the visitor presumes, but “a local peasant, a samorodok purer than gold, from the kingdom of darkness and tallow candles.” The composite image of electricity established in the story provides a powerful counterpoint for both stereotypes invoked in the ironic statement: Russia, “dark” and “backward” in European eyes, and its subjects held back by ignorance and superstition. Golden light emitted by incandescent bulbs, the most recognizable icon of modern electrical technology, symbolically purifies both entities.

The two connotations of the term samorodok are particularly significant in this context. In the natural sciences, it signifies a metal that can be found in pure form. Slavophiles appropriated the word, which can be literally translated as “self-born,” to describe an authentic, non-Eurocentric national identity. The second meaning played a crucial role in repudiating objectivism and discrediting institutional learning derived from the West: as Slavophiles claimed that genuine insight arose from organic connection with the soil, the “self-born” became a particularly valorized repository of situated knowledge. Lomonosov, a fisherman’s son, was the first historical figure anointed with this term.

Gold and light in Sluchevsky’s story create a direct connection between the samorodok and electricity. As his relationship with the miraculous new source of power transcends the hierarchy between the subject and the object, both the human and his source of energy are completely transformed. Rather than remaining a passive force of nature subjugated to serve as mere fuel, electricity manifests its true potentials in the samorodok’s hands by alchemically transfiguring him into a substance “purer than gold.” Even though “Captain Nemo in Russia” recuperates early-nineteenth-century associations between electricity and alchemy, the older cathodic mode also serves to reconcile the spiritual orientation of Slavophilism with twentieth-century modernity. Originally posited as an organic antithesis to the dehumanizing influence of technology, the samorodok develops a
life-transforming nonobjective relationship with the primary driving power of the imminent future.

This new reflexive relationship between humanity and technoscience underlies the crucial but unexamined role that electricity played in Nikolai Fedorov’s ambitious project for universal salvation. Critiquing the dichotomy between feminized nature (priroda) and masculine reason (razum), he called for a new nondualistic model of engagement with energy. In Fedorov’s view, the fundamental conflict between nature’s “blind force” and “humanity rendered helpless by her unpredictability” could be resolved by recognizing the elements as parts of the same organism as humans (2: 262). Cultivating an intersubjective relationship between “water, air, fire, and the substance of human bodies” would eradicate famine and flood, striking at the very roots of hunger and disease and paving the way toward immortal life (2: 261).

The electrical means to attain this new “cosmic subjectivity” are delineated in the last section of the Philosophy of the Common Task in a series of essays tellingly titled “Regulation of Nature” (“Regulatsiia prirody”). Both the tone and the contents of these essays are overtly science fictional. They extrapolate recent developments in science and technology to describe the radically different forms and functions they will assume in the visionary thinker’s novel paradigm of knowledge and action. The last essay in this series eulogizes an unknown nineteenth-century scientist, Nikolai Karazin, as the true progenitor of Fedorov’s method. Karazin’s portrait is indeed that of a samorodok—a provincial visionary from Kharkov whose primary aim was to alleviate the plight of rural agrarian Russia. His plan was to transform electricity in nature—those “waves and lashes that have long astounded the mind and instilled fear”—into a beneficent source of “life-giving rain that could be commanded at will from the sky” (2: 261, emphasis in text). The objective was to trap atmospheric electricity and use it to fuse hydrogen and oxygen in the air.

What is remarkable about Fedorov’s resurrection of Karazin is that he transformed the nineteenth-century scientist’s technological proposals into a living embodiment of cosmic intersubjectivity. The philosopher laid out an imaginative spatial scheme through which he represented the initial separation and final fusion between humans and
elemental energy. “For a long time,” mused Fedorov, “humans have helplessly gazed into the atmosphere with its incessant rumblings and upheavals without having a means to participate in the ebb and flow high up in the atmosphere” (2: 261). The separation of the Earth from the heavens reflects the limited potential of the mind as long as it remains separated from natural matter and energy. Resolution of this impasse requires a series of technological interventions involving electricity. First, balloons powered with electricity—the same “magnetic aerostats” of Odoevsky’s fiction—are sent up to trap and store atmospheric power. The balloons are then connected to the Earth’s surface with “long metallic wires,” which in turn fuse with “metallic pipes for transferring electrically-generated rain” to arid farmland (2: 261).

The scenario conjures up a striking landscape of multiple umbilical cords between the vast cosmos and the mortal inhabitants of the Earth (2: 263), in which electrical energy literally incarnates a new connection of fertile benevolence between nature and humanity. A closer examination of Fedorov’s proposal also reveals the dialectics between anodic and cathodic approaches to electricity. While atmospheric energy remains untapped, it represents the feminine mysterious persona of nature, inaccessible to human reason and indeed a source of fear and flood. The transformation of this mysterious entity into a fountainhead of resurrection requires masculine anodic rationality to overcome its alienation. The wires and pipes connecting Heaven and Earth also resemble an electrical circuit whose poles have been finally conjoined, leading to a colossal outburst of new life.

**ELECTRIFYING MODERNISM**

**THE VITALIST ALCHEMY OF SCIENCE FICTION**

Eschatological thought, however, was not the only sphere in which the anodic and cathodic potentials of electricity were synthesized into a powerful narrative of overcoming death. A pair of unusually correlated speculative texts—one written by an obscure popular author, the other by a founder of the Symbolist movement—envisions electricity as a combined conduit of physical immortality and psychic transfiguration in the imminent future. The popular writer Vladimir Shelonsky interwove the two aspects in a science fictional novel titled *In the Future World (V mire budushchego)*, published in 1892. This work
is modeled on a traditional *voyage imaginaire* with one crucial difference: the spaceship that transports an eclectic group of scientists and philosophers to the North Pole runs on electric power. Such a substitution of the magic carpet with a futuristic machine is hardly remarkable, but a matrix of spiritual allusions transforms this tale of adventure on an electric ship into a uniquely Russian allegory of folk chiliasm. The protagonists choose electricity as the only force strong enough to match the ultimate objective of their quest, *Polnoch’* or the “Midnight Land.” According to scholars of utopian folklore, the term originated in a sixteenth-century legend of fugitive Old Believers who wandered about in Siberia looking for an undiscovered section of the Arctic where nobody ever grew old. By enabling humans to reach this mythic space, electricity evolves into a technological means to achieve immortality. Like Sluchevsky and Fedorov, the author ascribes the conception of the project to a Russian *samorodok* incarnating a synthesis of sophisticated scientist and peasant magus. He solves the problem of constructing a battery that can store enough energy to last the duration of the journey; after much trial and error, the protagonist receives a dream revelation that gold is the only appropriate medium for trapping and transporting electric power.

Shelonsky’s narrative is remarkably similar to the only experiment of Andrei Bely, the Symbolist poet and literary theorist, in writing science fiction. Bely’s story, published in 1904 and titled “Argonauts” (“Argonavty”), is set in the twenty-third century. The plot consists of a perilous journey in an electrical spaceship. Its passengers call themselves “Argonauts”—an obvious allusion to the myth of Jason seeking the Golden Fleece—and choose a peasant-engineer who also possesses prophetic powers as the leader of the group. He uses gold to construct and propel the fantastic vessel, trapping large amounts of electricity in its shining scales. After many trials and tribulations, the group arrives at a magical space in which their bodies turn into golden rays and their minds leave the material world to connect with the transcendental noumenon. The story also contains an autobiographical subtext that transforms it into an epistemological and aesthetic manifesto. It renders the quest of the literary group “Argonaut,” which Bely founded, into an inimitable synthetic form of science fiction.

Shelonsky and Bely’s works operate on the same set of motifs de-
veloped in Sluchevsky’s fiction and Fedorov’s philosophy: the unique relation of the *samorodok* to electricity, gold as both the conduit of electrical energy and the alchemical means of transubstantiation, and resurrection as the goal of electrification. Bely’s story, however, restores the vital connection between language, electricity, and life first articulated by the Romantics. Read as an allegory of a literary movement, “Argonauts” introduces a novel connotation to electricity as an indispensable element of *zhiznetvorchestvo* or life-creation—a term Russian modernists used to convey their goal of transforming life through art. Synthesizing Pushkin and Gogol’s imagery of electricity with the new democratizing impulses of Sluchevsky and Fedorov’s extrapolations results in a new vision of art in modern Russia: an electrical force unleashed from the rarefied atmosphere of urban elitism that would become a potent medium for changing the entire society.

In contrast with Bely, however, some Russian modernists were obsessed with the rapid domestication of electricity in the West. Rather than reinterpreting it for the audience at home, they bemoaned the profanation of a mysterious cosmic force in the name of progress. The most prolific science fiction writer among this group, Valery Bryusov, predicted an apocalyptic moment in the near future when the irrational cathodic “essence” of electricity would wreak vengeance upon humanity blinded by the material comforts provided by its technological manifestations. On the eve of the First World War, Bryusov published an ominous story titled “Rebellion of the Machines” (“Vosstanie mashin,” 1914) that thematized the imminent implosion of society. The world erupts into mayhem when the appliances and electrical grids citizens depend upon develop a “diabolic logic” of their own and take over. In images that explicitly invoke the Romantic conception of electricity, domestic artifacts such as light bulbs, telephones, and radios begin to personify and respond to the humans’ repressed anxieties. A “nervous explosion” (100) destroys both the topography and the equilibrium of a society organized into interconnected “power zones” (101).

While Bryusov conceived of an electrical discharge as deadly rather than liberating or resurrecting, many of his contemporaries enthusiastically adopted the image of an electric spark instantly destroying the existing order of things and transfiguring the consciousness of the people. The term “electrifying” appeared in Russian journalism in 1917
as a metaphor for the unrest consuming intellectuals and proletariat alike. “The political atmosphere is electrified,” wrote Nikolai Shelgunov, a public intellectual and leftist activist, on the eve of the Revolution; “everyone’s heightened consciousness will explode into a single electric discharge.” Not surprisingly, razriad, the Russian term for an electric discharge, became a favored metaphor of the Futurist movement in Russia. Unlike the Symbolists, Futurists did not regard the contested connotations of electricity—agent of apocalypse, medium of resurrection, facilitator of superior lighting and communication—in separate and mutually exclusive categories. Like the Italian Futurist Filippo Marinetti hailing “the reign of Holy Electric Light come to liberate Venice from venal moonshine,” they adopted electricity in toto as the most potent embodiment of the movement’s epistemological, social, and aesthetic agenda.

The shock of an electric current conveyed particularly well the mortal blow Futurists wished to deliver to existent hierarchies. More radical members of the movement, such as Khlebnikov, declared that such a shock would remove detritus of the past, purge the present of its falsehoods, and provide the necessary prelude to a future utopia in which electricity would play a constructive role in reorganizing both material life and human cognition. Khlebnikov developed this theme by synthesizing positivistic and mystical perceptions of electricity in a completely new paradigm. Rejecting the classical myth of Prometheus that underlies representations of electricity from Lomonosov’s poetry to the science-fictional samorodok, he turned to archetypal Slavic beliefs for articulating its valence and functions in the Russian context. According to A. N. Afanas’ev, the pioneering folklorist whose commentaries exerted a decisive influence on Khlebnikov’s imagery, lightning was long perceived to be the divine agent that generated the universe from chaotic matter: the God Perun is believed to have animated and spiritualized the Earth’s dead flesh by touching it with his sword of heavenly fire. Accordingly, Khlebnikov eschewed the modern term “electricity” in favor of the archaic molniia, meaning lightning.

In a letter to fellow-Futurist Alexei Kruchenykh, Khlebnikov defined electric power as the reincarnation of primordial lightning. He outlines its tremendous potential for reconstituting not just material life
but *logos* itself. Futurist language, Khlebnikov contends, is an “electrical discharge” (*razriad*) because it breaks down stratifications of “high” and “low,” “literary” and “folk” diction. This formulation of electricity as a force for synthesizing Russia’s estranged internal halves adds a radical dimension to the linguistic symbolism of Bely’s science fiction. Whereas the Argonauts posited electricity as a technologically mediated source of energy, Khlebnikov rejects the mantle of modernity altogether. The archaism *molnia* penetrates false signifiers of literary language and elevated diction to become the agent for restoring language to the primordial Slavic persona. This hypothesis is borne out by the invocation of Pushkin—also recuperated by Bely—in the same letter. Khlebnikov contrasts his own understanding of electricity with that of Pushkin, “for whom electricity merely translated foreign words into Russian” (367).

The possibilities opened up in the letter to Kruchenykh are fictionalized through a narrative poem composed between 1915 and 1921—a period beginning before the Revolution and ending after the Civil War—in which electricity is transformed into an elaborate cosmogonic myth. Faithful to his assertion that the new form of energy will peel away layers of false consciousness and generate a national persona authentic to its core, the poet makes a radical break from its prior representations as an agent for ameliorating existing ills of the modern age. Instead, he constructs an original framework of space-time within which lightning brings about *poesis*.

Khlebnikov’s poem “Lightning Sisters” (“Sestry molnii”), which has received practically no critical attention, represents an especially powerful instance of his inimitable proclivity for folding back the present to an as-yet-uninitiated past. He splits and feminizes the ancient deity Perun into twin “lightning sisters,” who become “the only Gods” of the future: “I am God / And you will not have / Other Gods / Except myself.” The story of creation revolves around the premise that a radical transformation of the environment—such as that posited by a Marxist revolution—would remain meaningless until their “talking sword” kindles the language and spirit (158). Lightning is the power animating the New Soviet Man, who is portrayed as both a technician and a poet. His mechanical or artistic creations remain lifeless until
fired by the electric spark of inspiration. Lightning is the feminine “muse” that injects life into unborn words and vast future construction sites that only exist as blueprints in the imagination (170).

It is obvious that Khlebnikov did not literally abandon tropes of modernity such as literary language or technology. But instead of recognizing them as already accomplished facts, his myth of the future imbues the very concept of modernity with an aura of immanence, whose masculine power cannot be phenomenologically manifested without the feminine cathodic element. It is also important to note that the poet both appropriates and subverts preexisting narratives to develop his original approach to electrical poesis.

Fedorov’s fingerprints, for example, are visible throughout “Lightning Sisters.” The poem reiterates the philosopher’s gendered dualism between man and nature as well as his spatial dichotomy in the opening image of the sisters, “perched at the top / of long green stalks” (155) looking down on a landscape of human bodies and human tasks waiting to come to life. Like Fedorov, Khlebnikov identifies modern humanity as a male entity, a “warrior” (159) embodying the incomplete consciousness of the anode. Reason, which blinds him in the Common Task, is the element that lightning seeks to shear away: “Fear the dullness of reason! / I will clothe the [naked] one / Who has been deceived by Reason” (156). In an earlier version of the poem, Khlebnikov explicitly invokes the Fedorovian aim of employing electricity to “fertilize” the agrarian heartland with rain: “I’ll run after the harvest / . . . We rejuvenate and freshen” (381). But the final version transcends the philosopher’s ultimate objective of bringing back to life the dead forefathers of all humanity.45 Khlebnikov’s “lightning sisters” do not purport to bring those who are already dead back to life; instead, their cosmos is unborn, waiting to be animated by the cathodic feminine creative impulse.

Khlebnikov’s feminization of electricity stands out in the very masculinist cult of the machine, associated with Futurism. His choice to represent a dual female body as the primary source of poesis, however, can be traced back to an earlier mode of representation. At the cusp of the twentieth century, the exciting new source of power provided a rich metaphorical source for articulating divergence from the norm of carnal, heterosexual love. Vladimir Solov’ev, for example, depicted sexual
sublimation not as bodily intercourse, but as a “fusion of opposites yielding light.” The Symbolist poet Zinaida Hippius amplified this formulation in her 1901 poem, “Electricity” (“Elektrichestvo”). Structured in the form of an electrical circuit, it initially depicts the anode and the cathode standing for unresolved dichotomies not just between positives and negatives but also flesh and spirit, death and life, the past and the present. Their coming together at the end of the poem constitutes at once an explosive orgasm—denoted by razriad, the same term as electrical discharge and catharsis—and transcendence. The spark causes instantaneous death to the parts of the circuit, but also ushers in the blinding light of life after death. Scholars who have delved into Hippius’s ambiguous sexuality refer to the poem as a particularly bold instance of cross-gendering, despite the perceived dichotomy of the male and female poles of the circuit. Khlebnikov’s triadic conception of the twin lightning sisters and the lone “warrior” complements the complicated sexual permutations of Hippius’s Symbolist poetics.

Like a number of avant-garde writers and artists, Khlebnikov committed himself after 1917 to devising utopian projects meant to be translated into reality. Electricity forms the basis of the most elaborate of his plans. A series of housing and education projects, “Homesteads from the Future” (“Kol iz budushchego,” 1918–21), which the poet composed after the long-awaited catharsis of the October Revolution had already taken place, represent electricity as a consummation of physical power and spiritual energy, a spectacular result of the contact between masculine human endeavor and the feminine heavenly spark of lightning. The landscape of Russia in the future is dotted with transformers and radio towers, monumental structures of electrical technology that also serve as anthropomorphic totems. Bridging Heaven and Earth through “hairs of lightning,” the gigantic markers of electric power serve as conduits for Perun’s divine logos. Electricity operates in this fictional reality as the metonym for internationalist egalitarianism brought about by a successful synthesis of its material and metaphysical functions: power stations and radio towers not only disseminate light and information in Khlebnikov’s utopia but also serve the more abstract function of transforming the consciousness. They fuse hitherto disparate units of society into a harmonious “universal soul.”
In the chaos and privation following the October Revolution, the science fictional synthesis between the anodic and cathodic connotations of electricity remained one of the few “real” repositories of hope for the nation’s eventual recovery and progress. Despite—or perhaps because of—the continued absence of electricity from everyday life, its imagined potentials for saving Russia and its subjects only gained in strength. The worst years of War Communism was when the government first began to valorize mass electrification. Bolshevik rhetoric about instantly modernizing Russia, therefore, betrays more synergy with than divergence from the science fictional extrapolations discussed in this chapter. Acutely conscious of this inversion between reality and representation, Khlebnikov added a comment to “Lightning Sisters” in 1920 declaring that “electricity is now the only real force that can conquer tears.”

GOELRO ELECTRIFICATION

SCIENCE FICTION’S SYNTHESIS OF SALVATION

In the economic and social devastation following the Civil War, while the actual production of electricity plummeted, the synthesis of its anodic and cathodic perceptions continued to thrive in political manifestoes and literary production. Artists and writers’ responses to Lenin’s slogan demonstrate that both GOELRO and its architect were seamlessly absorbed into the epistemic and figural continuum explored in the previous sections. Two examples from the visual arts illustrate this point.

Lenin stands in the foreground of both Gustav Klutsis’s painting Electrification from 1920 and Pavel Filonov’s GOELRO from 1930 against the canvas of an electrified world. His representation, however, is far from realistic. Both portraits recuperate the tremendous potentials of synthesizing the anodic and cathodic perceptions of electricity that were perpetuated and popularized through science fiction and its allied cultural discourses over the three preceding decades. Rendered in a distinctly Suprematist mode, Klutsis’s depiction of “electrification” foregrounds the transformation of the mortal leader into a gigantic superhuman. It is significant that even though the technological infrastructure of electrification—the anode—is prominently featured in the painting as a gigantic transformer, it is nevertheless subservient
to the human transfigured by electricity’s cathodic power. Filonov’s portrait, composed a decade later, complicates the connection between electricity and modernity even further. In a mode reminiscent of the science fictional associations between electric light, gold, and the alchemical transubstantiation of base flesh into pure energy, Lenin’s body becomes one with the red-and-gold landscape presumably illuminated by electric power. The painting also invokes Fedorov’s projects of eliminating the duality between subject and object, and Khlebnikov’s vision of immanent modernity powered by the lightning sisters. Electric light, making the Futurist’s imagined buildings transparent and shattering the division between inner and outer space, also penetrate the leader, the first child of the Revolution.

The most sophisticated engagement with GOELRO, however, may be found in the science fiction of Andrei Platonov. An engineer by training, Platonov began his involvement with the Bolshevik electrification plan at the level of local politics. He spent many years in the early 1920s electrifying the countryside around Voronezh, his hometown in the Tambov region. Platonov’s first response to Lenin’s slogan reflects the sensibility of the samorodok peasant-engineer of science fiction to perfection. In 1921, Platonov composed a pamphlet titled “Electrification” (“Elektrifikatsiia”) to be distributed in the local party cell. Rhetorical and representational strategies of the ostensibly “informational” essay belong squarely in the continuum examined in this chapter. The pamphlet describes in epiphanic tones how electrification will bridge the rift between town and country, radically improve both industrial and agricultural labor, and change the quality of life for workers and peasants alike. Simultaneously, it describes the Revolution as a mystical cosmic event, a lightning discharge (razriad molnii) that has changed the world. Along with expressing hope that electricity will save historically deprived sections of Soviet society, Platonov also proclaims that it is the new instrument for uplifting the consciousness of its most deprived citizens. Not only would electrification provide shorter working days and domestic comfort to workers and peasants, but also produce a complete change in the indefinable “essence,” sut’, of the proletariat.51

In contrast, Platonov’s fictional accounts of electrifying rural Russia offer a chilling deconstruction of the Bolshevik project. While the task of producing energy ex nihilo, literally out of nothing, stands at
the center of his early short stories “Markun” (1921) and “Thoughts of Satan” (“Satana mysli,” 1922), whose Fedorovian parameters Thomas Seifrid explores in some detail, it is Platonov’s late science-fiction story “The Homeland of Electricity” (“Rodina elektriches’tva”) published in 1926, that engages directly with GOELRO.52

“The Homeland of Electricity” is set in the ruinously dry summer of 1921 among Russian peasants located literally in the middle of nowhere. Although Platonov adopts a “realistic” locale and time, it is that very chronotope that provides a perfect frame for critically enacting utopia. Inhabitants of the Russian village, ravaged by war and famine to the extent that their bodies are literally shrinking, are ready to receive any succor available. Paradoxically, the lack of equipment and information—the village is simply allotted a broken-down generator with no fuel supply—places them in a pre-GOELRO time warp when electricity simply did not exist in its mechanical manifestation. Their perceptions and representations of electrification, therefore, are rendered through a rich spectrum of metaphors not from contemporary propaganda but pre-Revolutionary science fiction. Platonov depicts the villagers’ assessments of electricity in palpable intertextual connection with earlier representations of the mysterious energy. The generator represents an animate, supernatural, feminine being, and Party rhetoric becomes an object of superstitious faith. Women compare the nonfunctioning dynamo with a miracle-working icon of the Madonna, a heavenly intercessor mitigating drought and famine and restoring the fecundity of the earth; men assign it the status of a Red Worker sent by the authorities to “correct” their ideological orientation.53

The peasants interpret the Bolshevik leader’s pronouncement literally as magic incantation rather than policy statement. “Now life will be mighty and beautiful, and there will be eggs for everyone” (45), the village head sings, paraphrasing the promise of the Hymn to the Third International: “Now life will be mighty and beautiful, and there will be bread for everyone.” Folk chiliasm, rather than revolutionary zeal or technological knowledge, lies at the basis of this eccentric association of electrification and eggs. Equipped only with a broken dynamo and no fuel, famine-ravaged peasants fail to understand that electrification is meant to revolutionize agriculture. Instead, they regard the nonfunctioning generator as a repository of life in its most
cosmic manifestation. Eggs represent the fountainhead of creation in Slavic folk belief, in which the world is said to have originated from a “cosmic egg” in pre-Christian mythology; the symbol later evolved into the colorful eggs of Resurrection shared at Paschal celebrations. The song grotesquely reverses the potential of cosmic regeneration with which science fiction ranging from Sluchevsky’s “Kapitan Nemo” to Fedorov’s and Khlebnikov’s philosophical fantasies imbued electricity. The narrator-protagonist of Platonov’s story, a mechanic summoned from town to help the villagers, represents a similar mockery of the samorodok-hero. Caught in the rift between language and reality, his subjective perceptions begin to literalize the paradox of rural electrification. Full of official zeal, he arrives at the village only to find himself in a parallel universe. At first he is skeptical about the villager’s adoration of the generator, but in the absence of infrastructure, he begins to accord it the same anthropomorphic or deistic status. In order to pro-
vide the necessary energy for starting the dynamo, he first attempts to fuel it with grain liquor—a profane waste of the plentiful “bread” promised in the Third International—and then coaxes out his own “vital energy” (36) to start the recalcitrant machine (mashina in Russian is grammatically feminine). Following the directives of the local council, he attempts to educate the villagers about the new-fangled source of energy. But scientific, mechanistic explanations completely fail their purpose, and the protagonist finally resorts to the same metaphysical terms as Futurists in an earlier era. Citing folkloristic myths of creation, he sums up the definition of electricity: “It is molniia, lightning . . . the spirit of the Gods” (40).

Well into the 1930s, when numerous hydroelectric dams had been constructed across Siberian rivers and Socialist Realism already possessed its own brand of hydroelectric fiction, the “soul of the Gods” continued to infuse Soviet discourses of the socialist utopia. The cover of a 1934 issue of the propaganda journal USSR in Construction, designed by none other than El Lissitsky, the iconic figure of Russian Constructivist art, demonstrates that behind all the transformers and turbines, the cathode still lurked somewhere in the penumbra of electrified Russian life.
Creating the Human

The same “soul” or ineffable essence that transformed electrical technology into a vital force of resurrection in Soviet Russia becomes a potentially fatal liability in the future world of Zamyatin’s *We*. The novel ends with the chilling description of a medical treatment designed to cure deviant citizens that involves the surgical removal of a growth in the brain that houses the soul. The narrator D-503 undergoes precisely such a procedure to reverse the pernicious effects the soul had been exercising on his consciousness, causing him to resemble a primitive form of humanity that is securely cordoned off behind the transparent wall of the city-state. The mathematician’s hands sprout hair and his skin grows coarse in tandem with the degeneration of his cold, rational mind, which now fluctuates with the heat of emotion and develops the capacity for critical thought. Surgical removal of the soul signifies the landmark victory of the state over an “epidemic” (184) that instigated the first organized rebellion in its history. D-503 ends his account with a simple phrase: “Reason prevailed” (221).

Zamyatin’s *We* may be interpreted as a narrative of the disjuncture between the human subject and the subject of the state. The body of the text produced by the diseased citizen, D-503, consequently becomes an equally contentious battleground. The narrator’s private journal, which itself is taboo in a state that has mandated “everyone [. . .] to compose treatises, epic poems, manifestoes, odes, or other compositions dealing with the beauty and the grandeur of the One-State” (5), begins as the required epic but ends up becoming a textbook example of Bakhtin’s theory of the novel, in which divergent temporalities, voices, and perspectives disrupt the “single word, the single voice, and the single accent.”¹ Both the physical body and the body of language in *We* thus become potent sites of the individual subject’s battle with what Foucault called biopower. According to Foucault, biopower
is “the practice of regulating subjects through an explosion of numerous and diverse techniques for achieving the subjugation of bodies and the control of populations.”

The intricate dialogue between science and the state in what Mark Adams eloquently calls the age of “visionary biology” in Russia has recently emerged as a focal point of historical research. Examining the veritable explosion of new fields ranging from experimental psychophysiology to endocrinology, serum therapy to tissue culture, Nikolai Krementsov traces the coeval continuum of scientific and political revolutions that commenced with the establishment, in 1890, of the Imperial Academy of Experimental Medicine and culminated in the 1920s with state-sponsored projects of creating the New Soviet Citizen. Although these historians of science point out the uncannily science fictional aura that surrounded Gastev’s Central Labor Institute, Ivan Pavlov’s psychoneural laboratories, Nikolai Bernstein’s school of biomechanics, and the Center of Blood Transfusion established by none other than the author of Red Star, science fiction itself occupies a peculiarly marginal place in literary and cultural investigations of biopower in the same period. Irene Masing-Delic’s seminal survey of God-building, Eric Naiman’s incredibly generative study of sexuality in the era of the New Economic Policy, Irina Paperno’s multifaceted examination of modernist experiments in zhiznetvorchestvo or “creating life,” and Seifrid’s nuanced overview of Platonov’s signature fractures between the body, language, and consciousness pay particular attention to the convergences and disjunctures between visionary thought, material practice, and literary representation. Yet, as Masing-Delic asserts, the investigation of “the here and now, in the midst of everyday life (byt)” rarely takes into account “science fiction or ventures into utopian realms.”

Following Zamyatin’s counterargument, examined in the introduction of this book, that science fiction was an unprecedented negotiating medium between everyday life, byt, and the higher planes of existence, bytie, this chapter focuses on its crucial role in the project of what I call “biological modernity” in Russia. Biological modernity implies biophysical, biopsychological, biosocial, and biocultural change, often disciplinary in nature, with a shared emphasis on the betterment
of life. The continuum between prerevolutionary and Soviet science-fictional figurations of the human examined in the following sections illustrates that in spite of the scientific revolution of “visionary biology,” the act of envisioning biological modernization in Russia did not follow a linear course of progressive rationalization and mechanization of the body and psyche. Instead, in what may be identified as a peculiarly national engagement with biological modernity, Russian science fiction clung to an ethos of emergence and nonteleological transformation even as it appropriated techno-scientific means of reconfiguring the body and the consciousness.

A discussion of the new human in the Russian imagination should rightly begin with the unique nature of the controversy around Darwinism. Daniel Todes, in his landmark study of Darwin’s reception in Russia, emphasizes that in spite of its widespread implementation in both the natural and the social sciences, the concept of struggle was often repudiated or reconfigured to accommodate notions of organic connectedness and social harmony. He situates Peter Kropotkin’s manifesto, “Mutual Aid” (1902), within similar ideas espoused by Russian botanists and zoologists of the same period, many of whom believed that inimical environmental conditions—the primary descriptor of Russia’s own location and climate—generated greater cooperation rather than competition. Alexander Vucinich documents that even as many thinkers turned to Darwin in their “quest for a general science of society,” its Malthusian component never gained wide currency: the concept of social Darwinism, for instance, was rarely fused with the class struggle. Not only did the progressive humanist Leo Tolstoy unite with the pantheist Vasily Rozanov in condemning Darwinism as a divisive social force, but materialists such as Nikolai Chernyshevsky also decried it as “not progress but degradation.” Supporting Chernyshevsky’s stance as “beautiful and powerful,” Rozanov condemned Darwin’s picture of the world as “emotionally unsatisfying, superficial classification.”

Science fiction emerged as an early platform for articulating a connection between the anxiety surrounding Darwinism and those concerning the rational model of the human based on the Cartesian duality between the body and the soul. Vladislav Uminsky’s popular novel, The
Unknowable World: Mars and Its Inhabitants (V mire nevedomogo: Mars i ego zhiteli, 1896), depicts the evolutionary fate of the “former human race” at the end of the technological age. Its world is an ecological wasteland, deprived of all forms of life and inhabited by a few scattered beings living in mortal fear of each other. The combined effects of industrialization and evolutionary struggle on the physiology and psyche of the species are catastrophic. Since machines become a logical extension of the body, with “mechanical ears” replacing the sense organs and airplanes replacing locomotion by foot, the original sensory organs atrophy and fall away. As bodies become metallic prostheses, consciousness regresses into a state of complete apathy. The protagonist, the only character who has forcefully retained the vestiges of a soul, proclaims that only by restoring the organic unity of the mind and body, synchronizing spiritual evolution with mechanical development, could the race save itself. Contemplating positive alternatives to his ancestors’ fate, the Martian concludes that a new, non-objective relationship between humans and their environment holds the key to salvation. The terms in which he articulates this goal subvert the key Darwinian concept of divergence of the species: “If only humans had conjoined with the universe instead of separating from it, we could have coexisted forever.” The Martian has recurrent dreams of a paradisiacal age when the ground was alive with plants and animals and humans could communicate with birds. In this idyllic state, science and technology renounce their instrumental functions to become regenerative forces that establish an unprecedented mutual flow between man and nature.

Such an organicist ideal—which might be interpreted as a kind of ecological criticism avant la lettre—emerged as a predominant motif in Russian science fiction over the subsequent two decades. Furthermore, the impulse to transform humans from helpless victims into a monistic, integrated, and immortal collective developed into an independent theme in numerous works. Whereas Uminsky presents this objective as an abstract form realizable only in dreams, science fiction soon became a principal medium for envisioning how science and technology, the very instruments of modernity, could be appropriated for resisting biopower.

A landmark set of insights and innovations, developed between the
1880s and the 1910s, fueled the Russian imagination of transcending the Cartesian binary between body and soul. Physiological psychology contended that consciousness is intrinsically bound with bodily processes and that subjective experience and objective knowledge are but two aspects of the same physiological impulses. Biologists modified Darwin’s harsh schema by incorporating such findings into alternative hypotheses of human evolution, some of which claimed that all organic life, including human life, was inherently spiritual and hence, part of a universal monistic whole. Physicists declared matter and energy to be consubstantial and early in the twentieth century, Einstein proved that matter and energy can be freely transmuted into each other. Meanwhile, a number of well-publicized attempts were undertaken in biology and medicine to engineer the mind by altering physiological processes. Such experiments also included projects to immortalize the consciousness by preserving biological matter. Each of these developments were discussed widely in both the intellectual and popular press in Russia, and, as may be expected, interwoven in their interpretations to a far greater degree than in actual cross-fertilization across disciplines.

In order to correlate the developments that challenged some of the most powerful tenets of biological modernity, their reception in Russia, and their science fictional extrapolation into bold alternative portraits of the new human, this chapter follows three overlapping narrative strands. They are organized according to three principal scientific fields and three modes of intervention. The first section examines the influence of physiological psychology and monistic evolutionary theory on fictional schemas to physically unite the soul with the body. The second traces the additional input from the physical sciences that further legitimized the first model, producing visions of transforming the physical environment in order to alter human evolution. The third traces the rich legacy of biological and medical engineering that produced one of the most ambitious projects to resolve mind-body dualism, harmonize human society, and immortalize the body and spirit. The concluding section examines the lingering presence of these early fictional blueprints in the conception of future humanity in early Soviet science fiction.
Sluchevsky’s novel *The Professor of Immortality* (*Professor bessmertiia*), published in 1891, presented the first elaborate plan for combating the mechanization of humanity and mitigating its dismal evolutionary fate with active help from contemporaneous scientific and technological developments. Through the narrative voice of an eponymous hero, Sluchevsky relates a plan to reunite the spirit with the body, resolving the problem of dehumanization by rational progress, and then to immortalize humanity, saving it from struggle and extinction. The nascent discipline of experimental psychology provides the theoretical premise for this plan, while the instruments described for its execution bear direct relation to the newfound continuum between matter and energy in the physical sciences. The fictional “project for immortality” operates on the assumption that the body and spirit are consubstantial, which the protagonist insists has recently been proved by a new scientific discipline variously called physiological psychology or psychophysics. With the help of revolutionary theories of matter and heat, he proposes to reconstitute humanity’s imperfect physique, creating within the body a tangible niche for the soul. Thus the body and soul—which, according to the professor, rational science has separated “brutally”—would be re-united as a monistic and homogenous whole, immortal and immune to disease and degeneration.12

Aware of the paradoxical synthesis of science and spirituality in the plan, Sluchevsky introduces a fictive interlocutor for the “professor of immortality” in the form of an avowed rational “empiricist” (43). Not surprisingly, the detractor accuses the hero of religious delusion and asserts that his project is based on a very eccentric type of mysticism. Indeed, the paradigms of the professor’s worldview seem to conflate the respect Orthodox Christianity accords to the flesh with its belief in the immutability of the soul, bolstering them further with the animistic cosmology of theosophy, a movement in particular vogue among Russian intellectuals. Theosophy combined the precepts of Buddhist reincarnation, Orthodox Christianity, and modern science, describing man as only one incarnation of a monistic cosmic consciousness that
successively passes through “baser” evolutionary stages in the form of minerals, vegetables, and animals.13

The professor counters the accusations by citing revolutionary new investigations of the body and mind, which conclusively indicate that the two are organically linked. Claiming that such developments possess the potential of literally creating a “new heaven and earth” described in the Revelations of St. John, he names three key figures whose work provided him with the scientific basis for his project: the German physiologist Ernst Haeckel, “more Darwinian than Darwin himself,” and the fathers of experimental psychology, Hermann von Helmholtz and Wilhelm Wundt (45). The impact of their work, widely discussed in both intellectual circles and the popular press in Russia, may be compared with the effect of Nikolai Lobachevsky’s non-Euclidean geometry across science, philosophy, and the arts.

Ernst Haeckel (1834–1919) was the first thinker to reinterpret the tenets of Darwinism to make them compatible with a monistic view of evolution. In his native Germany, he was known as the “redeemer” of Darwinian evolutionism. Rather than accepting that struggle was the only catalyst for evolution, he embraced the more temperate thesis of Darwin’s later work, *The Descent of Man* (1867), in which humanity was conceived as part of organic nature’s eternal movement toward self-perfection. His attempts to respirtualize mechanistic conceptions of nature extended to the primary units of both organic and inorganic worlds: Haeckel’s last work, *Kritsallseelen: Studien über das anorganische Leben*, was devoted to a study of the soul in all matter, claiming that each crystal and cell possessed a soul.14

In addition, Haeckel infused his cosmology with Lamarck’s older model of heredity, which stresses the transmission of acquired characteristics from generation to generation rather than interspecies war. His first work, *Generelle Morphologie* (1866), represented humans as an integrally connected part of all animate and inanimate life on Earth. Through his unique fusion of Spinoza’s monism with selected elements from Darwinian and Lamarckian evolutionary models, Haeckel created a picture of the world that repudiated all “mechanistic cosmologies” starting from Descartes to Darwin’s *Origins*,15 contending that an innate vital force suffused all organisms.16 Citing ongoing experiments
in the field of cellular biology, he claimed that even the smallest units of nature—cells and molecules—are monistic entities possessed of a soul. The “mnemonic” replication of protoplasm, he asserted, played the decisive role in evolution.\textsuperscript{17}

Haeckel’s philosophy of the innate spirituality of all matter became instantly popular in Russia, where many thinkers were struggling to reconcile scientific Darwinism with a life-affirming view of humanity’s future. Ironically, Lenin’s famous anti-monistic invective, \textit{Materialism and Empirio-Criticism}, attests to the tremendous popularity of Haeckel in Russia. In the final chapter of the book, titled “Ernst Mach and Ernst Haeckel,” Lenin notes that “the eminent scientist’s” 1899 treatise, \textit{The Riddle of the Universe}, was “the little book [that] sold \textit{hundreds of thousands of copies [emphasis in text].} Immediately translated into all languages and appearing in cheap editions, it clearly showed that Haeckel’s thought reached the people, that there are masses whom Ernst Haeckel won immediately over to his side.”\textsuperscript{18} As early as 1874, in fact, the philosopher Vladimir Solov’ev eulogized Haeckel as the “thinking man’s salvation from the death sentence of Darwinian selection” and the “scientific proof of the soul.” Solov’ev extrapolated the theory of protoplasmic soul to propose a model of ascension from matter to spirit; he even used Haeckel’s theory to provide a scientific explanation for spiritualism, describing it as the evolution of the body from a concrete to an ethereal state.\textsuperscript{19} In the media, Haeckel’s name came to be associated even more frequently with evolution than Darwin’s. In a series of features provocatively titled “Where are we from, who are we, and where are we going?” \textit{Nature and People} named not Charles Darwin, but Ernst Haeckel as “the father of evolutionary biology.” The series lauded his “much more complete picture of the universe” that illustrated the continuity of the organic and inorganic worlds and provided the first scientific description of the “existentiality” (bytlivost’) linking the human body and “higher nervous functions.”\textsuperscript{20} The same journal also published an article on the latest discoveries in embryology, providing further support for Haeckel’s claims regarding the evolutionary continuum between the brain cortex, sense perceptions, and “soul” in various forms of life.\textsuperscript{21}

Hermann von Helmholtz (1821–1890) and Wilhelm Wundt (1800–1869), the founders of physiological psychology, lent further scientific
legitimacy to the notion of an evolutionary continuity between the body, the consciousness, and the soul. In his pioneering early work, Die Erhaltung der Kraft (1847), Helmholtz applied the general laws of energy transformation, substance exchange, and temperature induction to nervous functions. By presenting experimental proof of what he called the “psychophysics of feeling,” he sought to establish a set of general laws from mathematical and physical sciences, disciplines traditionally devoted to the study of the physical environment, to explain the links between the body and the mind. Helmholtz invented instruments such as the ophthalmoscope and ophthalmometer to quantify nervous perceptions, psychic impressions, and emotions, using technology to capture the ineffable workings of the psyche.

Helmholz’s revolutionary work was popularized in Russia as a multifaceted solution to the “maladies of the age”—the fabled fin-de-siècle degeneration of body, mind, and spirit. Nikolai Grot, cofounder of the Moscow Psychological Society, produced an extended study on Helmholtz’s “physiology of feelings,” subsequently using its methods to uncover the roots of pessimism in physiological evolution.22 Helmholtz’s experiments were also extrapolated to envision future technological manipulation of human consciousness through the body. An article in European Herald suggested that his methods of “measuring the soul within the body” led to the discovery of artificial means that would transform soulless evolutionary processes into a journey toward spiritual salvation and physical immortality.23 As the following illustration from Nature and People suggests, human beings in the future would be able to discard their depleted brains by replacing the head itself—a familiar science fiction conceit that made its appearance not just in H. G. Wells’s The Island of Dr. Moreau, published in 1896, but also in Mikhail Bulgakov’s satire of the New Economic Policy period in Russia, Heart of a Dog, published in 1925, which Yvonne Howell has examined in conjunction with the Bolshevik eugenics movement.24

The first bona fide scientist who argued for the unity of body and soul, however, was Wilhelm Wundt, whose methodology combined ideational or introspective psychology, traditionally used to study “higher consciousness,” and physiological psychology, used to chart “neurological processes.” He investigated the continuum of the soul in humans and animals along monistic lines similar to Haeckel’s.
Wundt’s experimental investigations of parapsychological phenomena such as mediumism and hypnotism were interpreted in Russia as a scientific vindication of the afterlife. The scientist’s works, especially those pertaining to the links between physiology and spiritualism, produced a truly astounding number of translations and commentaries in the Russian press.25

For thinkers who had welcomed Haeckel’s alternative view of evolution, physiological psychology held particular appeal as the experimental vindication of monism. Solov’ev’s entry on Wundt in Brockhaus-Efron’s Encyclopedic Dictionary describes his work as “empirical proof of Spinoza’s thought.” The Russian philosopher notes that Wundt’s most remarkable contribution was to demonstrate that the body and the soul were but two sides of one and the same ultimate reality (deistvitel’noe bytie).26 Haeckelian monism and physiological psychology provided the primary motivations for the Moscow Psychological Society, established in 1882, whose mission was to in-
vestigate the newfound syncretism between the sciences, philosophy, and religion. Essays published in the society’s periodical claimed that psychophysiology provided crucial empirical support for an array of contemporary critiques of both evolution and mechanization. On the journal’s pages, Helmholtz and Wundt provided the ground for synthesizing philosophical systems as culturally diverse as Edmund Husserl’s phenomenology and Madhyamika Buddhism. I. Tarakhanov, a regular contributor, published six long articles on the psychophysiological explanation of the transmigration of souls, Telesnaia zhizn’ kak brozhenie, published serially from June to September, 1889.

The human body, now scientifically identified as the seat of consciousness, also became a subject of intense speculation about creativity, emotions, collective consciousness, and myriad parapsychological powers. In the 1880s and 1890s a flood of articles and reviews on the subject appeared in European Herald, offering physiological analyses of supernatural phenomena. Not surprisingly, psychophysiology also inspired renewed efforts to locate the soul within the human body. Eminent philosophers such as Nikolai Lossky and the mathematician Nikolai Bugaev—father of the Symbolist Andrei Bely—engaged in the study of the evolutionary continuum between the physical body and the immortal spirit. The epigraph to their inquiry reiterated the millenarian idiom, also cited in Sluchevsky’s novel, of St. John’s gospel.

Science fiction reveals the extent to which the synthesis of Haeckel and physiological psychology outlined above contributed to the emergence of an alternative to biological modernity. The protagonist of The Professor of Immortality is an alter ego of the author, who had studied under Helmholtz and had firsthand acquaintance with Wundt. In a unique quasi-fictional, quasi-scientific discourse, the narrative interweaves the author’s university notes and papers with fictive extrapolations. The synthetic form is in turn based on a convergence between Wundt’s “empirical parallelism” of the body and soul and Helmholtz’s discovery of the physical foundation of psychic processes. Invoking the phenomenon of artificially induced synesthesia—altering or mixing sense-perceptions—Sluchevsky’s protagonist contends that altering bodily experience would correspondingly reconstitute the cognitive and emotional faculties of the human race. Following Haeckel’s reinterpretation of Darwinism, which states that all creatures evolve
toward greater perfection, and Lamarckism, which states that the organism acquires characteristics to adapt to the environment, the professor comes to the conclusion that determines the further course of his project. He decides to modify the parallel realm of the spirit by changing the physical characteristics of the body.

The second part of the novel focuses on the means to employ science and technology for reunifying the body and spirit and reversing the Darwinian model of evolution. The professor enlists the help of Lobachevsky’s geometry and the recently expanded laws of thermodynamics for carrying out his plans. The choice is significant, because each of these revolutionary discoveries in mathematics and physics added a nonobservable dimension to empirically perceivable reality. While non-Euclidean geometry posited a fourth dimension of space beyond the observable three planes, thermodynamics demonstrates that tangible matter transmutes into ineffable energy. Extrapolating each of these theories, the professor describes the soul as the “fourth dimension” of the body, a physical extension that is not visible to the human eye (56–58). In a remarkable paradigm that combines an abstract mathematical proposition, physiological psychology, and monistic epistemology, Sluchevsky’s protagonist redefines the fourth dimension as an “embodied reality,” the physical manifestation of Wundt’s “parallel empirical realm of the psyche.” The implications are clear: a human being spanning all four dimensions would transcend his limits in space and time, becoming omniscient and immortal. Furthermore, Helmholtz’s study of heat induction and energy transformation in nervous processes is incorporated into this scheme to create a similar exchange between body and soul. The third law of thermodynamics, consequently, generates a new teleology of evolution that would mimic the process of immortalization outlined above. At the end of its “cooling” evolutionary cycle, the professor asserts, the fourth dimension of the soul will transmute back into the physical body, reanimating it and giving it new form. Someday, he dreams, humans will be able to regulate the thermodynamic exchange of matter and spirit by controlling the temperature of the environment (117).

The inspirations, principles, and objectives of this ambitious science fictional proposal closely anticipate the emergence of a bona fide scientific field that called itself biophysics. Twenty years after Sluchevs-
sky’s novel was published, Vladimir Bekhterev, the founder of experimental psychology in Russia, extrapolated the latest achievements in subatomic physics, radioactivity, X-rays, and relativity to offer a rigorous scientific vindication of monistic evolution toward physical immortality. In a speech delivered at the Psychoneural Institute in Moscow in 1916, Bekhterev drew a number of analogies between the newly discovered unity of matter and energy in physics and the indivisibility of body and psyche in physiological psychology. He concluded that they differ merely by degrees of physical manifestation. Advancing the term “universal energy” to denote the common substance from which both the body and the soul originate, Bekhterev invoked relativity, X-rays, and radioactivity to demonstrate the ephemeral nature of matter and its constant transmutation into energy. He pointed out the parallel between Einstein’s assertion that universal energy remained constant irrespective of changes in mass and Helmholz and Mayer’s assertion that the total quantity of energy in an organism remained constant irrespective of its physical configuration. Combining the two propositions, Bekhterev outlined a new philosophy called “evolutionary monism.”

Evolutionary monism contends that since the transmutation pattern from mass to energy is the same in the physical universe and the human organism, evolution signifies not degeneration but rather a physical conversion of organic matter into universal energy. With every life cycle, more and more body mass becomes energy, until ultimately matter and spirit become an undifferentiated, constant, and immutable whole. Bekhterev’s evolutionary cosmology bears a startling resemblance to Haeckel’s physico-theological evolutionary idyll, in which all inorganic and organic form derives from and evolves toward the perfection of an “eternal, all-inspiring energy.” Like the fictional professor of immortality, Bekhterev also discussed the technological means for catalyzing this alternative model of evolution at the collective level. He coined the name for a futuristic special science, “energetism,” whose express purpose would be to synchronize the physical environment, the human body, and states of mind. In the spirit of Bugaev, he also claimed that his theory constituted the scientific rediscovery of reincarnation underlying the Hindu and Buddhist faiths.

Bekhterev was only one of the numerous visionary scientists in Rus-
sia who appropriated revolutionary developments in physics and experimental psychology for creating alternatives to the standard model of modern humanity. The Ukrainian neurologist Naum Kotik, who proposed that brain mass constantly mutated into “radioactive energy,” experimented with transferring its emissions from one individual to the other. The ultimate aim of his project was to replace verbal communications altogether with telepathy, an invisible direct transmission of thought. The biophysicist Peter Lazarev also tried to convert “nervous energy”—electromagnetic waves emanating from the human brain—into a physical medium for telepathy and telekinesis. Sergei Beknev, a physiologist, dreamed of using the energy waves emanating from the brain as a future source of light and heat.35

**FROM MAN-MACHINES TO PLANT-HUMANS**

**THE COSMIC BODIES OF SCIENCE FICTION**

Such asymptomatic couplings between visionary science, religious philosophy, and experimental method provided tremen
dously potent metaphors for *zhiznetvorechestvo*, “life-creation,” through which the Russian modernists sought to end the dichotomy between reality and representation. Merezhkovsky, for example, predicted that all matter, including the human body, was gradually transmuting to a “tangible, physical yet superorganic state.”36 Bely was quick to apply new theories of biophysics to his own model of the monistic unity between phenomenon and noumenon: “the human body is undergoing change even as the laws of change in the state of matter became apparent.”37 The foundational principle of universal resurrection in Fedorov’s *Philosophy of the Common Task* was inspired by the nondualistic import of quantum physics. Identifying “atoms” as the common units that bound the perishable body with the “cosmic temple,” Fedorov envisioned a technological means for artificially conjoining and reorganizing the scattered atoms of dead ancestors, reunifying their resurrected bodies with the universal spirit, and restoring the entire human race to primordial “perfection” (*sdelannost’*). The restoration would eliminate material insufficiency, intergenerational strife, and all forms of physical and spiritual disharmony in the modern age. It is worth mentioning that Fedorov’s monistic conception of physical immor
tality is commensurate with his criticism of both Marxist “materioc-
racy” and Darwinian evolution, both of which he claimed were mired in the duality between humans and their environment.38

It is not surprising, therefore, that Fedorov’s disciple Tsiolkovsky articulated the most elaborate challenge to biological modernity in the grand framework of the cosmos itself. Like Bekhterev, Tsiolkovsky fused the fundamentals of physiological psychology with the discovery of subatomic particles, radioactivity, X-rays, and the energy-matter continuum to propose a universal paradigm of “cosmic energy,” a force that gives birth to all matter and serves as the ultimate evolutionary destination. In an essay titled “The Universal Will” (Volia vseelennoi), he wrote that this force, triumphantly vindicated by radioactivity and X-rays, drives evolution in a spiral rather than linear model through time. If charted in graphic form, it would resemble both a relativist’s portrait of the universe and the mandala of life in Buddhist art.39 While Bekhterev had noted the similarity between monistic evolutionism and eastern reincarnation only in passing, Tsiolkovsky made their correspondence a central tenet of his thought. In 1914, he published a “scientific study” of the subject under the title Nirvana.

Tsiolkovsky’s efforts to change the course of evolution also differed in a second fundamental way from the measures proposed by his predecessors and coevals. He did not limit his speculations to a reevaluation of evolution vis-à-vis the universal cosmic transmutation of matter and energy. He sought to delineate the concrete means by which humanity, propelled toward outer space, would attain physical proximity with the universal spirit. Such a plan required three steps: recognizing the self as a part of a cosmic evolutionary process, penetrating the depths of outer space, and reconfiguring the human form to approximate universal energy.

Technological treatises, philosophical works, and science fiction constitute complementary and integrally related parts of Tsiolkovsky’s project. The putative genres in which the thinker laid out his elaborate plan, therefore, constitute a narrative continuum whose appraisal necessitates a synthetic approach to fiction as an extension of both science and philosophy. The category of the human, rather than the limitless space of the cosmos, embodied the central node in this continuum. Tsiolkovsky declared that objective knowledge about outer space was useless unless it transformed the very foundations of sub-
jectivity: “It is time we stopped contemplating the distant wonders of the cosmos that astronomy has made accessible and make it a part of the way we perceive and live in the here and now.” This paradigmatic shift in the relationship between subject and object, the present and the future, led him to define scientific practice and technological innovation as “ethics” rather than “knowledge.” Firsthand acquaintance with the universe, he claimed, would not just expand humanity’s cognitive horizons but completely reorganize its behavioral, moral, and social structure.

As the first step in this process, he redefined the concept of the universe, which, in his opinion, rationalism had reduced to an abstract notion of passive physical space. He portrayed it as a giant being, a sort of pantheistic animus which, powered by a “higher brain” (vysshi mozg), encompasses and embodies all—from “the multiple suns among the countless planets” to the “most insignificant creatures.” Extrapolating the tenets of physiological psychology, Tsiolkovsky attributed the superior qualities of infinite benevolence, harmony, and immortality to this incarnate universe. The animistic conception of space was meant to inspire a sense of physical identification and organic connection between the human subject and the objects of his knowledge and action. In order to cultivate the epistemological shift from “knowing” to “experiencing” the universe, Tsiolkovsky advocated a method called “panpsychism.” In terms evocative of Haeckel, panpsychism stressed the importance of acknowledging that all inanimate and animate objects surrounding us are part of the cosmic body, imbued with the same life (zhizn’), animation (odushevlennost’), and sentience (chuvstvitel’nost’).

Tsiolkovsky surmised that humanity, a microcosm of this great body, exists in a direct evolutionary continuum with it, striving to approximate an all-embracing monistic harmony. Humans were cells of the universal body, miniature versions containing the seeds of its perfection. As early as 1902, he speculated that humanity would someday see its past as the equivalent to mere unicellular life, such as the amoeba or protozoa. His cosmology, therefore, contrasted the imperfect citizen of industrial civilization, stunted from living in cramped spaces and exhausted in the endless struggle for survival, with the vast physical dimensions of the universe. Tsiolkovsky’s belief that physi-
cal experience determines consciousness led him to conclude that this precise smallness and confinement created strife and disharmony, death and the specter of collective extinction. In order to overcome a wretched evolutionary destiny, humankind should aspire toward the great universal body and ultimately merge into the holistic cosmos. The project for countering evolution did not deny the rationale of Darwinism but sought to overcome its Malthusian logic. Tsiolkovsky asserted, therefore, that once the human race was freed from the confines of its lived environment, the very tenets of struggle and selection would lose their validity. Survival would become a redundant concept in the vast expanses of outer space, when the resources of millions of planets would be at humanity’s disposal.

“Technological superiority,” as Tsiolkovsky repeated in his philosophical treatises, was the primary requisite for humanity to free itself. His vision of alternative evolution in outer space, however, extended far beyond the physical conquest of the universe. The higher purpose of what Tsiolkovsky termed “colonizing the cosmos” was to bring the human body into contact with the great body of the universe. In accordance with his theory of nonobjective cognition, the visionary thinker believed that firsthand experience of vistas lying beyond the ridiculously narrow horizons of the Earth are imperative for transforming the future forms and functions of humanity itself. He was convinced that life in infinite outer space had proceeded much farther on the course of monistic unity, harmony, and immortality. When man escapes the boundaries of earthly experience, Tsiolkovsky speculated, he could become a part of the originary “monistic unity” (monisticheskoe edidenie).46

Besides providing Tsiolkovsky with templates for his legendary spaceships, technologies of flying also supplied the theoretical and practical grounds for his elaborate plans to alter humanity. Detailed procedures for creating a superior species, outlined in both non-fictional and fictive frames, reveal an ingenious cognitive matrix derived from physiological psychology, the physical sciences, and psychobiology. His philosophical and fictional works similarly attest to a particularly well-integrated progression toward a viable, compelling alternative to biological modernity. The first stage describes the metaphysical ramifications of emancipating humanity from Earth. The second phase,
which consists of the most elaborate and fantastic extrapolations, concentrates on processes by which technology reharmonizes the external environment with the body. The third stage outlines the ways in which environmental and bodily changes bring about a complete metamorphosis of consciousness. Only in his last science fiction novella did Tsiolkovsky represent the cumulative outcome of the three successive stages.

Outer space in Tsiolkovsky’s view was “free space,” svobodnoe prostranstvo. Freedom from terrestrial boundaries in his science fiction represented but the first step of a new nonobjective relationship with the universe. It is in this spirit that the protagonists of “Visions of Earth and Sky,” alter egos of the author, are called “haters of gravity” (nenavistniki pritiazheniiia). As they leave the gravitational field of the Earth, they attain a state of “instant cognition,” skoroe svetopredstavlenie, in which they realize that they now physically reside in the great body of the cosmos.47 Unrestricted, the microevolution of the human species is now ready to merge with the macroevolution of the universe. At this point in the story, Tsiolkovsky introduced an encounter between infant earthlings and highly evolved beings from outer space manifesting the next stage of evolution toward the cosmic ideal.

These “inhabitants of asteroids” display the results of two crucial principles Tsiolkovsky set forth for transforming evolution in outer space: freedom and technological superiority. Reflecting the limitless frontiers they call home, their physical frames have expanded exponentially beyond the miniscule, weak structures housing human life. Unlike humans, who stand like unicellular animals vis-à-vis the giant cosmic body, the asteroid-dwellers have evolved into the size of small satellites orbiting the planets. Further descriptions of these creatures reveal that transformation of the body in the freedom of outer space is not limited to size alone. Changes in physical proportions are merely a prerequisite toward realizing a higher evolutionary imperative.

Technology represented the means to achieve this higher purpose as well. Highly evolved extraterrestrials view machines as nonobjective instruments of self-experimentation in the laboratory of the body, where they coexist in a symbiotic relationship of mutual transformation. Asteroid-dwellers differ from their earthly counterparts in one major way: whereas the flying machines devised by the latter only serve
as dispensable transport, the same machines evolve into an organic extension of the extraterrestrial body. Tsiolkovsky’s sketchbooks contained numerous drawings of such future humans endowed with extended flying organs.

One might conclude that by erasing the boundaries between the body and the machine, Tsiolkovsky was advocating a refined form of mechanization. Closer examination of his original concept, however, reveals a comprehensive goal of transforming humanity’s relationship with technology as well as nature. He invoked the composition of protoplasm as a particular agglomeration of inorganic chemicals to argue that all apparently inanimate matter—including dead flesh and metallic machines—possessed a dormant spark of vitality and could be reconstituted into “living substance.” Thus Tsiolkovsky’s monistic conception of the world superseded that of his precursors, because machines, along with rocks, plants, and animals, become fellow-spirits in the chain of life. Rather than serve as mere protheses, technology becomes the primary agent of revitalizing the unity between humanity and its lived environment. The radically transfigured beings in his science fiction, in fact, do not conform to a mechanistic model in any way. A character in “Visions of Earth and Sky” asserts that technology exists to “recreate vitality (zhiznennaia sila) and creativity (tvorcheskaia sila), using the body as a laboratory.”

Tsiolkovsky believed that in the future, technology would be able to break down and realign the constituent elements of inorganic matter to any desired form of organic life. Accordingly, he depicted the wings of asteroid-dwellers as biologically engineered organic extensions of the body, whose metal has been technologically transmuted into plant protoplasm. They serve not only as an extension of the body but also the vital organ that transforms the human being into a self-sufficient ecosystem. Broad wingspans, exposed to trap maximum sunlight, contain chlorophyll, and can manufacture food from the carbon dioxide emitted during respiration. Human beings thus evolve into a race of “plant men,” zhivotno-rastenie, in Tsiolkovsky’s science fiction.

Embedded in this trans-speciation is a second method for overcoming selection and struggle. The fact that the human body needed to procure food from its external environment was, in Tsiolkovsky’s opinion, yet another ill-effect of Darwinian divergence. He speculated
that if the human organism could be modified into a self-sustaining plant, the primary biological grounds for competition would no longer exist. The synthetic anthropo-arboreal model presented in his science fiction occupied a tremendously important place in the broader concern about the future of humanity. Citing his early essays “Future Man” (“Chelovek budushchego,” 1897) and “Future Plant” (“Rastenie budushchego,” 1906), Tsiolkovsky called for the “devolution” of the human species as the first step toward counteracting disharmony and death.50

Just as the discovery of protoplasm inspired Tsiolkovsky to imagine botanical humans, the nascent field of biological engineering underlay his proposals to conjoin the human body with the animistic cosmic deity and thus make it immortal. Self-regeneration, samozarozhdenie, by which the inhabitants of the asteroids exchange life force with their environment, bear a strong resemblance to the methods used in tissue culture. The ecstatic tone in which the narrator of “Visions of Earth and Sky” describes gigantic “infusoria,” where highly evolved beings constantly “exchange cells with nature’s great body,” echo enthusiastic responses in the Russian press to the new disciplines of cytology and tissue culture.

The initial discoveries of Ross Harrison, who later came to be called the father of tissue culture, were soon developed into a system called laboratory infusoria, in which unicellular organisms could be multiplied and kept alive indefinitely in a fluid that simulated plasma—the basic component of blood. That living organisms can be kept alive in an artificial environment immediately elicited speculations in the Russian press that technologically sustaining living matter would someday ensure physical immortality for humans. Popular science magazines declared that scientists now possessed the means to immortalize the body, reunite it with the soul, and thus create a superior species whose inner and outer worlds were perfectly aligned and immutable. An article in Argus extrapolated that reconfiguring the chemical formula of blood could keep the heart beating forever.51 Based on reports that cells can replicate and conjugate eternally if their artificial laboratory environment is renewed at regular intervals, Nature and People hypothesized that biologists would soon find a way to extend the mysterious “vital force” of human life for indefinite lengths of time.52 In his last philosophical work, “Scientific Ethics” (“Nauchnaia etika,” 1927),
Tsiolkovsky included an appendix correlating tissue culture with Einstein’s equation of energy and matter. He envisioned that outer space would serve as the artificial environment or “infusorium” for future humanity, extending life indefinitely by constantly supplying the necessary amount of “energy” from the sun and other stars.53

The extraterrestrial beings in Tsiolkovsky’s science fiction, despite his vivid descriptions and logical consistency, retain an aura of utopian abstraction, making it difficult for readers to appreciate the viability of his messianic project. “Outside the Earth” (“Vne zemli”), his last and longest science fiction novella, attempts to close this gap between representation and reality by delineating the concrete means to transform terrestrial mortals into cosmic beings. It can be read, therefore, as a technologically mediated myth of origins. The cast of characters personifies a significant set of scientific discoveries and philosophical principles that, over the ages, challenged dominant paradigms of knowing and organizing reality. Among those who disproved the hierarchy between the Earth and the sky is Galileo, who united them in a model transcending Aristotle’s division of lunar and supralunar spaces, and Newton, who asserted that humans are subject to the same cosmic laws as the heavenly bodies. Pierre Laplace, the eighteenth-century mathematician who attempted to synthesize organic harmony and universal reason, occupies a prominent place in the pantheon, as do Helmholtz, the father of experimental psychology, and the legendary neurologist Ivan Pavlov. The central character of the novella, a fictive Russian scientist named Ivanov, obviously represents the author’s alter ego. He alone can organize the momentous findings of his predecessors into a unified system of knowledge. Ivanov’s character serves as the bridge between contemplation and action, translating the abstract thoughts of his colleagues into a practical philosophy.

The protagonists no longer engage in passive contemplation and observation of other highly evolved beings. Instead, “Outside the Earth” delineates the means and methods through which terrestrials would supersede the asteroid-dwellers in the scheme of cosmic evolution. The implied motivation of the narrative, in contrast to its predecessors, was not so much to contemplate the cosmos as the future residence of humanity but rather to envision new roles for science and technology in the process. “Outside the Earth” depicts machines be-
coming part and parcel of cosmic reunification and focuses particularly on the changes in consciousness that such a fusion would bring about. Technology in the novella changes and regulates the environment of humans in outer space, transforms their physical features by fusing into and enhancing the body, and ultimately alters psychical configuration. Space flight is transformed in Tsiolkovsky’s science fiction into a narrative of futuristic machines co-evolving along with their passengers. Spaceships, whose technical ramifications are described in intricate detail at each stage of their metamorphosis, serve as the protagonists’ alternative physical environment, providing air and sustenance. The machine in fact facilitates the scientists’ task of reconstructing the preindustrial organic unity between humans and the natural world. With the help of reflectors to catch sunlight and “fusion machines” to combine hydrogen and oxygen into water, the scientists raise plants in their capsule, establishing a perfectly balanced ecology of supply and consumption between mechanical and organic forms. Shkafandry, or spacesuits, designed to protect the body from the sun’s intense rays, are transformed by chemical realignment to trap sunlight and absorb carbon dioxide, making them into organic extensions of the human body. In a similar way, cellular exchange in the artificial environment of the spaceship prepares the body for eventual atomic exchange with universal matter.

This scheme of parallel, codependent evolution between men and machines encodes much more ambitious plans for a new imagined cosmic community. The narrative ends with portraits of the entire human race inhabiting outer space, each body transformed into a self-sufficient plant-human with the help of mass-produced spacesuits. Drawing upon methods of breeding exotic plants, Tsiolkovsky extrapolated the technology of hothouses to depict human “orangeries” scattered across the cosmos. The self-sufficient, unified, immortal collective organism does not just embody a resolution of biological conflict, however; it also functions as the determinant of an equally transformed consciousness. A chapter entitled “Conversations about Life in Outer Space” (“Razgovory o zhizni v efire”) depicts the means by which a reconstituted body leads to a corresponding change in mind and spirit. No longer in need of protection from the environment, the composite bodies in spacesuits abandon the use of clothes
as they physically merge with the surrounding elements. “The naked body means a pure soul!” exclaims a newly evolved member who exchanges “atoms” of heat with the cosmic body.55

Transitions from anthropocentric to arboreal models of humanity in Tsiolkovsky’s science fiction also symbolize the resolution of social inequality brought on by technological modernization. The philosopher-scientist envisioned that a future world populated by such bodies, each drawing its food supply from the unending light source of innumerable suns, would be forever free from the dehumanization of industrial society, ecological disasters, population explosion, and Malthusian conflict. He hypothesized that the uniformity of physical appearance, strength, and habitat—not to speak of the mutual exchange of life force between fellow species and the cosmic body—would cultivate a unique incarnated form of egalitarianism.

HEALING DARWIN AND MARX
THE HEMOSTATIC UNIVERSE OF SCIENCE FICTION

Physiological consensus is also the primary means by which Alexander Bogdanov proposed an alternative to the common denominator of struggle in Darwinism and Marxism. Bogdanov trained in medicine and practiced briefly as a psychiatrist. The publication of his first philosophical work, *Empiriomonism* (1904–1907), caused a major ideological break with the Bolshevik Party and established his reputation as the implied opponent toward whom Lenin directed *Materialism and Empirio-Criticism*. The Bolshevik leader attacked the tenets of Bogdanov’s seminal treatise, which invoked Ernst Mach and Richard Avenarius to assert that material reality did not exist independently of the observer and his sense perceptions. Lenin also referred negatively to the growing popularity of *Red Star*.

After the October Revolution, Bogdanov returned to Russia from exile and devoted himself to his original pursuit of medicine, which was concentrated fully on a lifelong obsession: two-way, or as he termed it, “mutual” transfusion of blood between human bodies. He resumed professional research on the subject in 1922 and two years later, conducted the first experiments in two-way transfusion. In 1925, he received funding for establishing a research center, which opened in 1926 as the “Institute for Blood Transfusion.” In the course of radi-
cal self-experimentation at this institute, Bogdanov met his death in a manner that seems as sensational as his science fiction. He died as a result of exchanging blood with a young patient, variously described as suffering from tuberculosis or malaria, in 1928.

Even though practically every study of Bogdanov alludes to his dramatic death, its connection with his broader philosophical and social theories on the one hand and *Red Star* on the other remains unexplored. His science fiction presented a vision of humanity transformed into a practically immortal collective organism through the mutual exchange of blood. The protagonist learns the secret technique of the Martians’ abiding vitality and eternal youth on a visit to the hospital. Netti explains to the earthling that “mutual blood transfusions [emphasis in text] between human beings” ensures that each individual is connected with an inexhaustible source of “elements that increase his life expectancy.” She suggests that although such procedures are known on Earth, dominance of “individualist psychology has rendered the thought of fusing people almost unimaginable to your scientists.” For Martians, in contrast, mutual blood transfusion “extends comradely exchange of life beyond the ideological dimension into the physiological one.” It has not only eliminated physical degeneration and biological struggle for survival, but also has served to construct an immutable psychological bond between the members of an egalitarian society. Blood has enabled the Martians to transcend the “superficial harmony” of socialism and evolve into a new stage of “physiological co-operation.” Most scholars assess this early fictional exegesis as some sort of coincidental prefiguration of the author’s death, or at most a manifestation of the impulse to transform art into life. K. M. Jensen correctly identifies blood as the “physiological expression of socialism” on Mars, but attributes Bogdanov’s demise to a suicidal instinct born out of “rational despair” over the political reality of Russia in the 1920s. Stites, in his perceptive commentary on *Red Star* against the background of contemporaneous science fiction, identifies Bogdanov’s death as one of many “characteristic utopian experiments generated by the Revolution.”

Indeed, a cursory look at Bogdanov’s biography may imply that he gave up medicine for politics early in his career and did not return to it until the end of his life. Recent scholarship, however, reconstructs
the missing link of his continued devotion to blood transfusion in the interim. V. S. Klebaner has established that even during political exile abroad, he kept up with cutting-edge research in the field through multifarious medical journals. Service as a military surgeon during World War I gave him the chance to observe the latest developments in transfusion techniques, and he returned to Russia armed with the fruit of many years’ continuous study on the subject. The credibility of this research, Klebaner demonstrates, helped neutralize his differences with the Bolshevik Party in the early 1920s and played a key role in garnering governmental support for the establishment of his Blood Transfusion Institute.59

In Bogdanov’s writings, two-way or “mutual” transfusion of blood began to figure prominently even before Red Star. His first essay on the subject appeared simultaneously with Empiriomonism. Subsequently, in works devoted to subjects as varied as organizational science and proletarian culture, he returned to the fictional passage cited above, using it to refine the paradigms of his thought and justify the experiments that ultimately took his life. His last voluminous work was devoted entirely to blood transfusion. It was a monograph titled Struggle for the Viability of Life (Bor’ba za zhiznesposobnost’), intended for “a public interested in science generally and scientific principles that govern society in particular,” which was published the year before his death.

Blood transfusion, therefore, cannot be dismissed either as an eccentric by-product of Bogdanov’s thought or an incidental motif in his fiction. Blood is the literal and metaphorical connective tissue that unifies his multiple personalities as medical practitioner, philosopher, science fiction writer, and social thinker. A close comparison of Red Star and Bogdanov’s most extensive treatise on the subject of blood transfusion, Struggle for the Viability of Life, demonstrates that the physical and metaphysical blueprints of his utopia—a world in which two-way transfusion embodies physiological, psychological, and social brotherhood—derived from a long-entrenched medical tradition, extending from the Middle Ages until the twentieth century, which was founded on the premise that blood was the mediator between flesh and spirit and the primary agent of vitality.

In order to locate Bogdanov in the continuum of resistance to bio-
logical modernity, blood transfusion in his fiction and philosophy should be considered in conjunction with the preceding discussion of monism, physiological psychology, biophysics, and biological engineering. As Mark Adams notes, the titles of *Empiriomonism* and *Tectology* were derived from Haeckel. Bogdanov received training in psychology at the precise time when physiological psychology made its explosive entrance in the intellectual circles of Russia. It is significant that *Empiriomonism* was published in the journal of Bekhterev’s society, *Issues of Philosophy and Psychology* (*Voprosy filosofii i psikhologii*), between 1904 and 1907.

Of these innovations, biological engineering, and specifically the field of rejuvenation or *omolozhenie*, provides the final and most direct clue to Bogdanov’s quest for an embodied medium that would not only manifest the principles of monism in the human organism but also transform biological and class struggle into a grand structure of shared vitality. The most prominent among Russian scientists looking for medical procedures to prolong life was also an ardent admirer and translator of Haeckel. Il’ia Mechnikov, whom Bogdanov cited profusely in *Struggle for the Viability of Life*, had translated *General Morphology* as early as 1869. A pioneer in embryology—a nascent field in Russia influenced heavily by Haeckel’s methods—Mechnikov later dedicated himself to rejuvenation. He tested dietary methods of increasing longevity, and attempted to improve memory and intensify emotion by removing toxin-producing glands. Another scientist cited frequently by Bogdanov was N. R. Shteinakh, whose methods of organic rejuvenation remained popular through the 1920s. He investigated the connections between sexual vitality and cerebral acuity by charting changes in brain function after testicular transplantation in primates. Bogdanov emulated the same precepts that inspired Mechnikov and Shteinakh, but instead of toxins and secretions, he chose a much more universal organic medium as the focus of his efforts. His proposed method of intervention and its projected consequences were much more ambitious than those of his contemporaries.

In “Empiriomonism,” Bogdanov claimed that the source of both the “external” or “physical” world and the “inner” or “mental” world lay in bodily sense perceptions. He argued that the different ways in which
experience was organized, rather than any innate difference in perception itself, gave rise to subjective and objective reality. The former he attributed to “individually organized” experience and the latter to “socially organized” experience. Consequently, he saw the root cause for biological, social, and spiritual conflict in the dual way in which perception was organized, and declared that a unification of the two spheres would resolve all long-entrenched relationships of subordination and dominance. Unlike his revolutionary compatriots, however, Bogdanov did not believe that transforming the external environment would automatically eliminate all differences between fellow men or between the individual and the species. Refashioning the dialectics between man and so-called objective reality, in his view, affected only the “static” or “quantitative” facet of experience; it did not transform the “qualitative” internal dynamics between the human body and mind. His suggested method of bringing about comprehensive physio-psychological harmony was as radical as his repudiation of dualistic metaphysics: Bogdanov thought it imperative to engineer the human body itself.

An article published simultaneously with “Empiriomonism” expounded the practical dimensions of a plan that proposed to eliminate all differences between individual and collective experience and thus resolve all physical and ideational conflict between fellow men. Two epigraphs to the treatise, titled “The Gathering of Man” (“Sobiranie cheloveka,” 1904)—“God created man in his image,” from Genesis, and Nietzsche’s “Man is the bridge to superman”—provide a glimpse of the Promethean race that would be created from the process. Bogdanov indicated that he had identified a single tangible medium, blood, that embodied the quintessence of both flesh and spirit. This medium would constitute the focus of his project. Two-way, or as he termed it, “mutual” transfusion between all members of society seemed to him the ideal scientific method for creating universal brotherhood, as the same source of life flowing through all bodies would “conjoin instead of fragment” both individual organisms and social collectives. Sharing a common pool of blood would thus engender a form of egalitarianism vastly superior to mere “external” redistributions of power and wealth.

Although Bogdanov’s project is delineated in rational terms, “The
Gathering of Man” betrays his particular penchant for mystical interpretations of blood encoded in centuries of religious rituals, traditional medicine, and alchemy. In the opening passage of the essay, Bogdanov asserted that blood represents the only comprehensive remedy for both epistemological dualism and social inequality because it is the only embodied form of the spirit. The implications of such a statement become clear in the first fictional amplification of his project. Not until Red Star did he negotiate the scientific, religious, and pseudo-scientific legacies of his ideas within the composite framework of universal blood transfusion.

The fictional rendition of his ideals represents far more than casual fantasy. The central chapter on Martian blood transfusion constitutes a palimpsest of allusions to Christian metaphysics, medieval medicine, and alchemy, all of which regarded blood as the universal agent of salvation and immortality. By encoding his own project in such terms, Bogdanov may have attempted to legitimate the principles of monistic organicism that underlay his philosophy and earned the derogatory epithets of “fideism” and “idealistic religious ecstasy” from Lenin. The complex, multivalent signification of blood in his novel serves to locate his plans within an alternative utopian tradition centered on the body and the art of healing.

The very terminology employed to describe blood in the novel invokes the supernatural power attributed to it in alchemy and medieval medicine. Instead of depicting it as a mere biological medium, Bogdanov chooses the metaphysical term “life force,” zhiznennaia sila, to denote the fluid that both connects and rejuvenates the Martians’ bodies and minds. Such a representation of blood reasserts the long-entrenched perception that it was the only incarnated conduit through which the immortal spirit could enter mortal human flesh. For centuries, Christians have enacted this belief by imbibing the Eucharistic “blood” of Christ and ritualizing the process of rejuvenating and purifying the sinful body by an infusion of the divine essence. It was by virtue of its symbolic status in religion that blood transfusion became a universal cure in medicine, widely prescribed for maladies affecting both mind and body. Alchemy added an element of animism to the mystical aura of blood by designating it the quintessence of vitality. Scien-
tists looking for the mysterious “elixir of life,” the fluid essence that would ensure eternal youth, remained convinced that blood was the bearer of life force, and consequently a majority of restorative potions and tonics in the Middle Ages contained blood as an indispensable ingredient. Even during the scientific revolution in seventeenth-century Europe, physicians continued to cultivate the syncretic symbolism of blood in medical practice while refining the techniques of transfusion and broadening its scientific scope. Humans were infused with animal blood in the belief that the “innocence” of beasts would restore sinful man to his perfect state before the fall from Eden. Thus the symbolic identification of the lamb with Christ led scientists in Restoration England to conclude that sheep’s blood was the most suitable medium for revitalizing the body and curing passions of the mind.

Bogdanov interpreted his project as a continuation, albeit a vastly improved one, of the tradition outlined above. Resurrecting the cumulative historical symbolism of blood was essential for his particular effort, because he hoped to elevate modern medicine from a mere biological procedure to a potential instrument for collective redemption. Blood transfusion, he believed, had lost its meaning as the mediator between body and soul under the debilitating influence of rational thought. Valorizing the holistic scientific tradition in which medical practitioners regarded blood in the same way as did mystics and alchemists before them, the Martian Netti blames so-called “progress” on Earth for the fact that humanity “lost” the traditional “secret knowledge” of eternal rejuvenation. Bogdanov iterated the same conviction in *Struggle for the Viability for Life*. The title of this work invokes blood as the vital “life force,” explicitly revealing that the mystical tradition provided a crucial bridge between his utopian vision and scientific practice. Mephistopheles’s famous declaration in Goethe’s *Faust*, “Blood is the very special juice of life,” both provides the epigraph for this late work and serves as its leitmotif, marking each transition from scientific discourse to speculative extrapolation. Bogdanov directly ascribed his methods to “precursors that have long been dismissed as mere fantasists.”

“Religious and mystical attitudes towards blood transfusion” inspired him to declare that the procedure would not only heal the rift between physical experience and consciousness, but also
resolve the fundamental problem of alienation in Marxist thought (44–45). He contended that in an age of rapid technological advancement, transfusion would restore the vital spirit to humans rapidly devolving into automatons (122–23). The process is described as “regenerating the bodily mechanism” in *Red Star*.

Blood transfusion had indeed evolved into a special branch of medicine, chiefly because of the fact that the fluid nature of blood differed starkly from static flesh. Visionary advocates of this procedure over the ages argued that the periodic renewal of the spirit was imperative not only for preventing physical degeneration and decay but also for redeeming the sins of the gross body. It was the notion of such an organic balance between flesh and spirit that prompted Robert Boyle, the most famous scientific personality of Restoration England, to represent the human being as a “hydropneumatic machine.” Rather than relegate the body to the status of an automaton, Boyle conceived of it as an animate and sentient machine whose spirit was embodied in blood. According to his model, the body acquired a spark of divine vitality from “the free flow of the spirit that restored it and conducted its welfare.”

Boyle’s antimechanistic portrait of humanity undoubtedly influenced Bogdanov’s blueprint. In *Struggle for the Viability of Life*, he calls his English predecessor one of the “watershed figures” in the history of blood transfusion (105).

Bogdanov also documented his reverence toward a second legendary figure from seventeenth-century England, William Harvey. As the first scientist to outline the circular movement of blood, Harvey was derided as a heretic. Until he claimed that blood carried out its miraculous action of detoxifying and replenishing each and every organ—a process called “re-enlivening”—while remaining an integral part of the human body, “spirits” were perceived to be superorganic forces. Harvey, in fact, may have directly provided Bogdanov with the fundamental conceptual model for his utopian plan to “conjoin” the body and consciousness of humanity through a universal circulatory system. Just like Bogdanov, however, Harvey’s brilliant scientific understanding was permeated with a deep conviction in the spiritual essence of blood. He described blood as “the balsam” and “vaporous spirit” that heals all too transient flesh in a remarkable cosmological metaphor of the circulatory system:
So the heart is the beginning of life, the Sun of the microcosm . . . by whose virtue, and pulsation, the blood is mov’d perfected, made vegetable, and is defended from corruption and mattering. And this familiar household God doth his duty to the whole body, by nourishing, cherishing, and vegetating, being the foundation of life, and author of all.65

Harvey’s drawings of the “universe” within the human body, which represented all life-forms physically connected through the “celestial fluid” of blood, may well have inspired Bogdanov’s idyllic vision of mankind as a collective organism, in which each individual would be sustained and rejuvenated by an interconnected circulatory system. The Russian scientist was also convinced that human life, if engineered to approximate Harvey’s system, would progress in opposition to Darwinian evolution. An examination of the term “circular development,” which Bogdanov chose to describe evolution on Mars, explains this view. He contrasted the “circulatory” flow of blood between organisms, which regenerates and continues life eternally, with the “linear” course of evolution on Earth, in which humanity as a species is destined to degenerate into bestial struggle and eventually become extinct. In Struggle for the Viability for Life, Bogdanov elaborated upon this contrast. According to his view that physical experience determines cognition, he concluded that free-flowing blood shared by all members of the species would forever change the way in which the human organism experiences the flow of time. He speculated that people would begin to think of time as a cycle rather than a forward march from birth to death once transfusion among individuals was synchronized to such a degree that any aging component of one body was instantly recharged with a supply of blood from another (81, 90).

The technical means for achieving this ideal incorporated earlier utopian conceptions of blood transfusion with new methods from the nascent scientific disciplines of biological engineering and rejuvenation. Popular novels of eighteenth-century France often described the free flow of fluids as the scientific cure for both the individual and collective body, and Charles Fourier, whom Mark Poster describes as “the hygienist of the universe,” constructed his cosmology based on the assumption that a fluid medium connected humanity with the divine
and played an indispensable role in nurturing fertility throughout the universe. Similar hypotheses of a universal biological medium connecting the universe was not uncommon among Bogdanov’s contemporaries: Alexander Danilevsky, a biochemist working on molecular structure of proteins, postulated that just as “cosmic ether” kept the inorganic world in balance, so also “biogenic ether,” or a similar substance, harmonized protoplasm in the living world and supplied its discrete parts with vital force.

The distinguishing feature of Bogdanov’s endeavor, however, was the plan to experimentally realize it. The advent of plasma culture at the turn of the twentieth century provided the breakthrough he had been waiting for. In both fiction and medical treatises, he speculates that new techniques of generating and sustaining living cells in artificially renewed environments would someday be extended to rejuvenate and immortalize human biological material. The process of mutual transfusion he described in Red Star bears a striking resemblance to the media accounts cited earlier about laboratory cultures of unicellular animals. Bogdanov derived the strongest argument for his project from the fact that such organisms were reported to survive over indeterminate amounts of time as long as the cells conjoined and the fluid medium surrounding them was periodically renewed. He depicted Martians replicating the process, with blood as the fluid medium and human protoplasmic content as the cells suspended in it. Just as laboratory-raised cells conjoined into stronger organisms—defying the natural process of divergence that Darwin had identified—the human beings in his novel evolve contrary to all rational predictions. A passage from Tectology, composed between 1913 and 1922, demonstrates his continuing engagement with this vision between the initial theses advanced in “Gathering of Man” or Red Star and their full exposition in Struggle for the Viability of Life: “As the internal environment of the organism, the environment of all its organs and fibers, blood bears their imprint as well as serves as their life-supplement. . . . In the transfer of blood from one organism to another, in correlation with its source, things such as ‘immunity’ are transferred. . . . The convincing conclusion is this: conjugation of organic fluids exerts not a partial effect, but full influence on the life functions of both organisms.” In his last treatise, Bogdanov recuperates this image, specu-
lating that mutual exchange of blood ensures the constant renewal of “the universal medium” or the “fluid organic environment” (28).

The elimination of physical disharmony, degeneration, and death, however, was only the proximate goal of Bogdanov’s utopian plan. Its ultimate aim was to “balance” and “harmonize” the more elusive relationship between body and consciousness. Sharing a common circulatory system, according to Bogdanov, was the only tangible means to achieve the “empirio-monistic” unity of body and spirit that formed the basis of his philosophy (44–45). Even in the earliest fictional extrapolation of his project, Bogdanov advanced the notion that physically conjoining humanity through a common circulatory system would result in a corresponding unification of individual consciousness, sweeping away all differences in behavior, worldviews, and social organization. Red Star expressed the hope that someday blood would not only transmit life force from one individual to another, but also act as a living medium for exchanging thought. The empathy and cooperation that already existed on a physical level in Martian society would then be matched by a parallel psychological cooperation, with blood providing the crucial bridge between body and consciousness. The paradigms of this ideal can be traced back to Empiriomonism, which stated that harmony in objective reality should be preceded by and mirrored in a corresponding rapport between bodily experience and cognition. Bogdanov, who accused Marxist thought of fetishism because of its limited focus on the material world, concluded that mutual blood transfusion was the only means to transform egalitarianism from an ideational construct to lived reality. Long after the Bolshevik Revolution had taken place, he continued to propagate the notion that blood was the “organic organizing medium” through which Socialist citizens could coordinate objective conditions with their subjective thoughts. In his last theoretical work, Bogdanov reaffirmed the thesis that mutual blood transfusion would ultimately create “the most perfect form of co-operation between two individuals” (148).

Reexamining Red Star in light of the above statement reveals that it is not the social system depicted in the novel but rather its highly evolved members who hypostasize Bogdanov’s ideal of incarnated egalitarianism. Collective exchange of blood renders the Martians’ physique, behavior, and social organization a streamlined harmonious
whole, in which the external body and internal consciousness reflect and complement each other in perfect accord. Bogdanov illustrated their synchrony through the Martians’ bodies, devoid of all racial and sexual markers, and their personalities, “impersonal but sympathetic, engaged in physical as well as intellectual labor, and free from all individual traits.” In order to represent the most potent symbol of their harmonized consciousness, Bogdanov resorted to the metonym of universal language, a common obsession of the Russian modernists. He devoted a section of Red Star to the description of a Martian language whose features epitomize the dissolution of gender boundaries and the agglomeration of individuals into an organically connected collective. As a result, morphological categories of gender and number, so essential to the author’s native Russian, become as defunct in the future world as the differences between fellow human beings. The most remarkable feature of this utopian language derives from Bogdanov’s alternative teleology of evolution. As the communicating medium of an immortal collective, whose bodies and consciousness are regenerated in an eternal cycle of blood, the Martian language does not possess the category of time.

Even though Bogdanov’s science fiction was propagandized—if only for a few years following the October Revolution—as a remarkable document of socialist utopianism, the new official blueprint of the future Soviet citizen could not accommodate his organically harmonized collective. The majority of postrevolutionary ideologues were instead engaged in defining a normative prototype based on the industrial worker. In exalted tones, psychologists and biologists of the new Bolshevik state predicted how the arrival of utopia would transmogrify man into a perfectly programmed production mechanism. Representatives of Soviet psychology such as Isaak Shpilrein and Nikolai Bernstein developed systems of streamlining human bodies according to a new principle called “biomechanics of labor.”

The discipline of psychology itself underwent a metamorphosis as an emergent school of “psychotechnicians” began to assert that the human mind could be studied as a purely mechanical phenomenon. A representative of this trend, Aron Zalkind—who simultaneously served as physician, psychotherapist, and the joint director of the Communist Academy and Institute of Communist Education—designed “psycho-
grams” of the ideal industrial laborer. His drawings were then used to test whether party members conformed to the normative profile of the New Man. The papers of Pavel Blonsky, a leading psychologist, reveal that the official rhetoric of science decried all organic conceptions of consciousness: “Human psychology can be abstractly quantified using the principles of natural science,” he wrote in a later treatise on the reevaluation of scientific method, “and human behavior can be presented mathematically through a function of multiple variables.” Biologists of the period also predicted that irrational concepts such as the soul would wither away in tandem with the dissolution of the previous social order. Emmanuil Enchman, a minor but popular thinker, declared that all individuals would soon become “quantifiable organisms.” Alexei Gastev, director of the Central Institute of Labor and founder of the new “industrial psychology,” proposed to alter humanity in a way that completely discredited the monistic ideals of Sluchevsky, Tsiolkovsky, and Bogdanov. As “nothing but perfect machines whose technical progress is unlimited,” Gastev’s imagined future was populated by barely identifiable humans who became indistinguishable from the instruments of their labor.

This model of rethinking and indeed reconfiguring the body and mind provoked as intense a reaction among the intelligentsia as Darwinism had at the turn of the century. Some members of the Russian avant-garde, who had initially subscribed to the mechanistic ideal of the Soviet citizen, began to rebel against the assumption that human beings would progressively lose their organic links to the natural world and that the body would become completely devoid of a spirit. Mikhail Matiushin, an artist initially associated with Cubo-Futurism, abandoned the representation of industrial modernity and turned to the natural world for prototypes of ideal form. His reverence for the organic harmony between man and nature led him to formulate a new nondualistic epistemology based on direct identification between the subject and the object.

As nature traditionally served as the primal object, Matiushin concluded that attainment of true knowledge involved metamorphosing the human body to simultaneously experience the world through his own perceptions as well as that of lesser forms of life. The fly with its multiple eyes inspired Matiushin to coin the term Zor-ved—
“Seer-Knower”—with which he christened his new aesthetic movement. In an approximation of “devolving” into other life-forms, his followers cultivated the organic perfection found in nature by sharpening their sensory apparatus.76

Matiushin’s aesthetic development illustrates in a particularly vivid way that alternatives to biological modernity, staged most generatively through the medium of science fiction, continued to function as an important fulcrum of dissident utopianism in Bolshevik Russia. Nikolai Aseev’s science fiction, in fact, depicts the mechanistic and organicist ideals of future humans in direct conflict against a ravaged landscape reminiscent of Uminsky’s Mars. His short story “Tomorrow” (“Zavtra,” 1921) describes, in two concentric narratives, how the same method of visionary biological engineering produces a representative of each type of man. The operation depicted in Aseev’s story is a heart trans-
plant, designed to make blood flow in different ways and thus produce personalities of opposite types. Although the fundamental motivation for such a plan—changing the circulatory system to create a vastly altered human species—bears close resemblance to Bogdanov’s vision, its outcome hardly conforms to the organically united society depicted in Red Star. The first patient is left with a dynamo instead of a heart, making him a “steel man” eulogized in Gastev’s poetry and immortalized in the refrain of a popular song—“We have a flaming engine instead of a heart” (Vmesto serdtsa plamennyi motor). In keeping with the principles of psychophysiology, an iron heart eliminates the need for a mind altogether. The artificial organ sucks out the creature’s very “essence of life”—Aseev uses Bogdanov’s favorite term for signifying the spiritual power of blood—and transforms it into physical energy, fulfilling the prescribed criteria that Alexander Zalkind, the new official psychologist of the Party, put forward for the ideal worker-citizen.

 Opposed to this mechanistic ideal is the poet, whose circulatory system has been accidentally connected with the sap of trees that are dying in the industrial wasteland of the future. Unlike the iron-hearted man, both his body and consciousness are attuned to the “soul” of the natural world. While describing this second prototype, Aseev explicitly alludes to Bogdanov’s belief that a circulatory system connecting all life-forms also bridges the rift between body and soul. The vitality flowing through the veins of the poet transforms him from an automaton to “a coordinator of the internal dynamics of all nature” (56–57). The poet’s newfound nonobjectivity, however, becomes as redundant as the “soul” lodged inside D-503. As his mechanistic counterpart and the products of his labor wreak an ecological catastrophe, causing the trees to “yellow and die out” (60), the circulatory system connecting them with his heart fails rapidly. Through this tragic outcome, Aseev also predicts the imminent demise of the ambitious aesthetic and ethical trajectory, reconstructed in this chapter, of transforming the human from an imperfectly assembled, despiritualized automaton, Prometheus plastoris, into the original Prometheus porphyrus, a living incarnation of the monistic, perfect, and immortal universal spirit.
Science and art both project the world along certain coordinates. All realistic forms are projections along the fixed, plane coordinates of Euclid’s world. These coordinates do not exist in nature. Nor does the finite, fixed world; this world is a convention, an abstraction, an unreality. And therefore Realism—be it “socialist” or “bourgeois”—is unreal. Far closer to reality is projection along speeding, curved surfaces, as in the new mathematics and the new art. Realism that is not primitive consists of displacement, distortion, curvature, nonobjectivity.

These are the terms in which Zamyatin described the brief period of efflorescence, poised between the dominant paradigms of nineteenth-century “bourgeois” and twentieth-century “socialist” realism, examined in this book. The preceding chapters document not just the intersection of scientific and aesthetic “projections” as Zamyatin describes, but also the ways in which they affect the “real” categories of space, time, energy, and humanity.

It is astonishing to observe how closely Zamyatin, writing in 1923, anticipated the views of contemporary authors and critics on the significance of science fiction in our times. His celebration of the break from the nineteenth-century canon—and his fear of an impending prescriptive aesthetic that creates a strict hierarchy between reality and representation—echoes the contemporary novelist Judith Merril’s claim that “realistic fiction [. . .]—a grotesque product of nineteenth-century super-rationalism and mechanistic philosophy—was the transient oddity” against which speculative or science fiction defines a radical new approach to the real. In what seems to be an almost verbatim transposition of the Russian author, she contends that “the literature of the mid-twentieth-century can be meaningful only in so far as it perceives, and relates to, the central reality of our culture: the revolution in scientific thought which has replaced mechanics with dynam-
ics, classification with integration, positivism with relativity, certain-
ties with possibilities, dualism with parity."²

The importance of this shifting relationship between techno-science, reality, modernity, and representation is also evident from the way in which Samuel Delaney distinguishes the social and political values of his art from those of realist fiction. His description of science fiction as the ultimate rebellion against the “monologic aesthetic” of modernity explains why it has acquired such significance not only for theorists of culture but also critics of science in the last three decades. By disrupting or inverting the hierarchy between subject and object, science fiction allows other kinds of subjects—whether landscapes, technologies, or alternative life forms—to speak for themselves, depicting more accurately their “dialogic interpenetration” in historical reality.³ Delaney’s formulation is especially useful for separating the universal concern of the present study—how to position Russian science fiction against existing frameworks of the genre’s production, consumption, and criticism in the Anglo-American world—from its particular, and much more interesting, focal points: what distinguishes Russian science fiction from its Western counterpart, why did it become so important so early in the Russian context, and why should its study matter? Dialogic interpenetration provides a compelling metaphor for both the ways in which this book sets about answering such questions and the central argument that emerges from it. Delaney’s term also captures its objective of resisting ideological schematizations to which both Russia’s brand of modernity and its variety of science fiction are particularly susceptible.

Science fiction’s dialogic relation to the real is evident from the first narrative arc traced in this book, which examines it as a potent medium of addressing the fundamental anxiety of a context that lay both inside and outside the map of modernity. Siberia, the air, and the cosmos—the triad of interpenetrating spaces through which science fiction staged its intervention in the Russian politics of space—refuse to be accommodated within the straightforward binary of pro-Western urban dystopias and anti-Western pastoral utopias between which Stites positions early Russian science fiction.⁴ Instead, by staging an unprecedented encounter between the dominant other of the technologized West and the subordinate other of new frontiers conquered
by science and technology, science fiction transformed Chaadayev’s “blank space” into an infinite field of contesting modernities. As this encounter moved from the real geography of Siberia to the purely imaginary depths of the cosmos, the cognitive and material instruments that conceived, discovered, and transformed them metamorphosed from mere objects and means to repositories of a uniquely Russian subjectivity.

The gradual elision of the Trans-Siberian Railroad with first Siberia, then the nation, and ultimately the entire planet, or the airplane and spaceship, which became the lifelines of universal brotherhood and a vast cosmic organism, challenged the very foundations of the Enlightenment conception of space. It is no wonder, then, that non-Euclidean geometry and Einsteinian relativity, the airplane and the spaceship, provided recurrent metaphors of a revolutionary aesthetic that Zamjatin, anticipating twenty-first-century authors and critics, designated as the most authentic way of engaging with reality.

If utopia or anti-utopia cannot accommodate the insurrectionist reconfiguration of the very notion of space, what might be a better way of theorizing how science fiction in Russia filled in the blank where the nation should reside? Foucault’s notion of heterotopia, advanced in an essay titled “Of Other Spaces,” provides a provocative model for answering this question. Unlike purely speculative utopias, heterotopias are places that actually exist but simultaneously “represent, invert, and render illusory” the real spaces of our lives. It is precisely this claim to the real that distinguished Russian science fiction, inextricably bound with the popularization of the scientific and technological revolution in Russian culture and life, from earlier social and metaphysical fantasy. Located on the very edge of new frontiers unfolding in real time before the audience, the “other spaces” of science fiction performed both critical and constitutive functions. They simultaneously challenged historically entrenched models of the nation and constructed alternatives to them. Such imagined places and the communities inhabiting them became real by convincing the audience, new acolytes of the revolution in space and time, of their logical consistency.

Heterotopias of early science fiction might even be termed hyperreal precisely because of another frequently cited aspect of Russia’s historical reality: the audience’s uneven experience of the artifacts and
conditions of modernity itself. As emphasized throughout this study, the very small coterie of cosmopolitan elites who spent significant time in the West included neither the vast majority of science fiction writers—including such visionaries as Tsiolkovsky or Khlebnikov—nor the majority of the reading public. Thus, instead of projecting “some more ‘realistic’ account of our situation,” as Jameson puts it, science fiction in the Russian context preceded its objects in the most literal sense. From this perspective, it is tempting to view Russian science fiction through the postmodern idiom of simulation, which, as Steven Shaviro argues, “does not imitate or stand for a given thing, but provides a program for generating it.”

The temporal peculiarities that defined the relationship between science fiction and modernity in Russia, examined in the second chapter of this book, might consequently be termed “heterochronic.” Like the simultaneously constitutive and critical function that enabled science fiction to intervene in the uniquely Russian conundrum of space, it emphasizes how the new category of writing overcame the conventional modalities of backwardness, acceleration, and compression for locating Russia in the history of modernity. The science fictional effects of simultaneity, interiority, and excess, which constituted the defining indices of the narrative arc of transcending what Walter Benjamin called the “homogeneous, empty time” marked out by the calendar, the timetable, and the clock, are particularly important for elucidating the contribution of the present analysis to the vast body of literature devoted to the subject of temporality in twentieth-century Russia. Prominent in this scholarly constellation are seminal critical insights and brilliant theoretical interventions built upon Bakhtin’s work, whose influence is palpable in the very conception of this book. Katerina Clark’s pioneering study of the aesthetics of socialist realism—whose engulfment of the science fictional hyper-real generated Zamyatin’s famous polemic cited at the beginning—posits the October Revolution as the retrospective starting point of an “epic time,” which sacralized the secular trajectory of modernity into another kind of homogeneous emptiness. A temporal Möbius strip, in which the end of history is folded into its beginning, also underlies Morson’s analysis of utopia as “uchronia,” which constitutes the main focus of his examination of parodic deconstruction in Zamyatin’s We.
Rather than positioning the Revolution in the dialectics of two mutually opposite and exclusive temporalities, the second chapter of this book demonstrates that the “epic” narratives of capitalist and socialist modernity are nested and mutually dependent. Consequently, it traces science fictional disruptions of closure in a continuum between prerevolutionary Russian science fiction and its Soviet-era successors. My approach here is bolstered by recent critical models of modernity in Russia, such as Alexander Etkind’s “inner colonization,” which also provokes a spatial reconsideration of the nation as both the homeland and the geo-historical other. Etkind contends that beginning from the eighteenth century until the post-Soviet present, imported ideas of what Russia should be have been imposed by an invisible state in a quasi-civilizing process that reduces the nation itself to its own colonial periphery.11

The analysis presented in the first and second chapters articulates the urgent need for a new descriptive term for Russian science fiction beyond the dominant binary model of utopias and dystopias. Synthesizing Bakhtin and Foucault's landmark interventions, I would suggest that the term “heterochronotopia” best captures the diverse modes of writing for and against multiple, contending regimes of modernity in a context that simultaneously stands inside and outside the dominant picture of the world to this day. The term is also useful for connecting the narrative arcs of the third and fourth chapters to the first half of the book. Science fiction in Russia created a unique forum for the dialogic interpenetration between modern mechanical energy and traditional organic vitalism that constitutes the common ground between the last two chapters.

Science fiction generated the heterochronotopic realm in which electrical energy, whose production remained conspicuously low in Russia until the late 1920s, became a signifier of cosmogony and poesis much earlier than Lenin’s famous proclamation designated it as the primary agent of social and epistemological change under Soviet rule. The third chapter also illuminates a rarely examined aspect of the way in which science fiction in Russia intervened in the material and symbolic discourse of power vested in the question of modernity. The synthesis of what I term the “anodic” and “cathodic” modes of perceiving
electricity reveals the crucial role of science fiction in reappropriating the gendered difference through which modernity was distanced from its others. Science fiction allowed the creation of a uniquely national idiom of power whose feminine dimension overcame the masculine narrative of progress.

The narrative arc of electrical energy merges seamlessly into the dynamics of bio-power explored in the fourth chapter. The same impulses of dialogic interpenetration that generated the uniquely trans-gendered vision of electric power underlay the potent science fictional model of humanity created from temporally and ideologically separated categories: the traditional imperative of God building, with its roots in Orthodox Christianity, and the October Revolution’s mandate of transforming, as Rolf Hellebust puts it, “flesh into metal.” The fourth chapter delineates a contour of life, codified and legitimized through science fiction, which simultaneously refined and resisted Darwinian and Marxist evolution with an unprecedented dialogue between kenosis on the one hand and the physical sciences, psychology, biomechanics, and eugenics on the other. The results, like the previous chapters, simultaneously reveal and critique the nested utilitarian goals that align the dehumanization inherent in both capitalist modernity and its Bolshevik alternative. Incarnating the insurrectionist potentials of science fiction analyzed in the previous chapters, the militantly uncategorizable bodies of science fiction troubled the teleology of perfection.

It is through the dual framework of openness and vitality that the connection between the two halves of the book becomes visible. The spatial, temporal, energetic, and pro/creative trajectories of science fiction in Russia, separately and in dialogic interpenetration, ultimately struggled to overcome modernity’s specters of enclosure, depletion, degeneration, and death. Russia’s disjunctive relationship with the locations and histories of the modern world provided the foundational impulses for the resistance to territorial, temporal, ideological, and symbolic closure that became the hallmark of science fiction. Its genealogy in the Russian context—shaped despite, or perhaps because of, the enduring continuum of millenarian crisis and messianic euphoria permeating the long duration between the fin de siècle and the
early Revolutionary era—reveals it as a hybrid form inalienably shaped by modernity, yet whose narratological, ideological, and ethical contours constantly subverted and superseded modernity’s universalized idioms and global import. Registering possibilities rather than making predictions, Russian science fiction thus acquired as much power to unmake modernity as to create an inimitable national version of it.
## Chronology

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1836</td>
<td>First Russian railway line opened between St. Petersburg and Pavlovsk</td>
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<tr>
<td>1848</td>
<td>Opening of the Warsaw-Vienna line from St. Petersburg</td>
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<tr>
<td>1853–56</td>
<td>Crimean War between Russia and the British-French-Ottoman alliance; inception of the Great Game between imperial powers in the Eurasian heartland, which would later involve China and Japan</td>
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<tr>
<td>1854</td>
<td>Lord Kelvin defines thermodynamics and proposes theory of entropy, the gradual cooling of all matter</td>
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<tr>
<td>1859</td>
<td>Publication of Charles Darwin’s <em>Origin of the Species</em></td>
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<tr>
<td>1861</td>
<td>Emancipation Reform by Tsar Alexander II, which granted liberation and full rights of citizenship to more than twenty-three million serfs</td>
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<tr>
<td>1869</td>
<td>Union Pacific Railroad completed in North America</td>
</tr>
<tr>
<td>1879</td>
<td>Thomas Alva Edison patents the phonograph</td>
</tr>
<tr>
<td>1886</td>
<td>Vladimir Bekhterev, who trained with Wundt, establishes Russia’s first center of experimental psychology</td>
</tr>
<tr>
<td>1882</td>
<td>E. J. Marey makes first demonstration of chronophotography</td>
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<tr>
<td>1885</td>
<td>John Kemp Starley invents the safety bicycle</td>
</tr>
<tr>
<td>1886</td>
<td>Gottlieb Daimler invents the internal combustion engine</td>
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<tr>
<td>1890</td>
<td>Ivan Pavlov becomes director of the Physiology Department at the Institute of Experimental Medicine in St. Petersburg</td>
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<tr>
<td>1892–1905</td>
<td>Construction of the Trans-Siberian Railroad</td>
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<tr>
<td>1894</td>
<td>Edison’s kinetoscope demonstrated in Europe</td>
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<tr>
<td>1895</td>
<td>Invention of X-rays by Wilhelm Conrad Roentgen</td>
</tr>
<tr>
<td>1896</td>
<td>First film screened by Auguste and Claude Lumière in Paris</td>
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<tr>
<td>1898</td>
<td>Establishment of the Russian Social Democratic Party</td>
</tr>
<tr>
<td>1899</td>
<td>Establishment of astronomical theaters in Berlin and St. Petersburg</td>
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<tr>
<td>1903</td>
<td>Split of the Russian Social Democratic Party into Bolshevik and Menshevik factions at the second congress in Brussels</td>
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<tr>
<td>1904–1905</td>
<td>Russo-Japanese War</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>1905</td>
<td>First Russian Revolution, which led to the establishment of limited constitutional monarchy, the State Duma of the Russian Empire, and a multiparty system; Lenin returns to Russia briefly before returning to exile in Europe in 1907. Albert Einstein publishes theory of special relativity.</td>
</tr>
<tr>
<td>1906</td>
<td>Orville and Wilbur Wright conduct the first human flight in a fixed-wing aircraft.</td>
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<tr>
<td>1909</td>
<td>Louis Blériot flies over the English Channel. First Russian aeronautical exhibition by Georges Legagneux in Moscow.</td>
</tr>
<tr>
<td>1911</td>
<td>Fredrick Winslow Taylor publishes <em>The Principles of Scientific Management</em>.</td>
</tr>
<tr>
<td>1914</td>
<td>World War I begins.</td>
</tr>
<tr>
<td>1916</td>
<td>Albert Einstein publishes theory of general relativity.</td>
</tr>
<tr>
<td>1917</td>
<td>October Revolution.</td>
</tr>
<tr>
<td>1917–23</td>
<td>Civil War (also called Revolutionary Wars) among various political factions and breakaway territories.</td>
</tr>
<tr>
<td>1920</td>
<td>Establishment of GOELRO, the State Commission for the Electrification of Russia. Alexei Gastev becomes director of the Central Labor Institute, which applied Taylor’s principles to the construction of the New Soviet Man.</td>
</tr>
<tr>
<td>1921</td>
<td>Lenin promulgates New Economic Policy, also called state capitalism, toward the end of the Civil War to promote economic reconstruction and social stabilization.</td>
</tr>
</tbody>
</table>
Notes

Introduction


In purely generic terms, there is not much difference between *nauchnaia fantastika* and science fiction. There is no scholarly consensus, moreover, on the origins of the Russian term. As Patrick McGuire (*Red Star: Political Aspects of Soviet Science Fiction* [Ann Arbor: Michigan Slavic Papers, 1985], 60) and Evgeny Brandis (“Gorizonty fantastiki,” *Neva* 10 [1979]: 171–81) elucidate, French and British works of the late nineteenth century claiming to be “scientific romances” may have inspired the Russian phrase, but it was utilized in an unsystematic and highly selective manner. The concerns of this study, however, are not the generic similarities or etymological differences between scientific fantasy and science fiction. I focus instead on the remarkable discursive and pragmatic deployment of science fiction in the Russian context, particularly in Russian constructs of modernity. Consequently, I use the English term throughout, qualifying it with contextual information where applicable.


Leonid Heller, *De la science fiction sovietique: Par delà le dogme, un univers* (Lausanne, Switzerland: L’Age d’Homme, 1979), 42.


The critic Elena Kovtun uses the term *nebulous* to convey the difficulties of constructing a history of the genre. “Zhanr v tumane,” *Literaturnaia gazeta* 43 (1995), 574.


22 Dmitri Merezhkovsky, O prichinakh upadka i o novykh techniakh sovremennoi russkoi literatury (St. Petersburg: V. M. Vol’f, 1893), 10–11.


26 Ibid., 112–13.

27 I am grateful to the staff of the Southern Regional Library at the University of California, Los Angeles, and the National Library, St. Petersburg, for help in compiling this data.

28 While the popularity of Verne, Flammarion, and Wells in Russia is widely documented, the venues of their publication have not been taken into consideration. The sponsoring houses of the popular science periodicals, in fact, often published both translated and Russian science fiction in the form of books and anthologies.


As Steinberg points out, however, with the notable exception of Katerina Clark’s Petersburg: Crucible of Revolution (Cambridge, MA: Harvard University Press, 1995), “literary studies of Russian modernism have been plentiful, although they have paid relatively little attention to the wider social and cultural settings” (7).

36 In this respect science fiction anticipated the “didactic” function of Socialist Realist literature that Katerina Clark (*The Soviet Novel: History as Ritual*, 3rd ed. [Bloomington: Indiana University Press, 2000], xii) situates in the political ecology and public culture of the Stalin years.

### 1. Conquering Space

the Future, ed. Elazar Barkan and Ronald Bush (Stanford, CA: Stanford University Press, 1995), contains a number of essays devoted to the interpolations of science, such as Einstein's relativity, and technology, such as photography, in the mutually constitutive relationship between territorial conquest, the modern world-picture, and the modern subject.


8 See Susan Layton, *Russian Literature and Empire: Conquest of the Caucasus*
from Pushkin to Tolstoy (Cambridge: Cambridge University Press, 1995); Harsha Ram, The Imperial Sublime: A Russian Poetics of Empire (Madison: University of Wisconsin Press, 2003); and Hokanson, Writing at Russia's Border.
10 Bassin, “Russia between Europe and Asia,” 4–8.
For a discussion of the society’s objectives and contributions, see Walicki, _The Slavophile Controversy_, 67–68.

Cited by P. N. Sakulin, _Iz istorii russkogo idealizma: Kniaz’ V. F. Odoevsky_ (Moscow: M. S. Sabashnikov, 1913), 1: 482 and 485.


Marks, _Road to Power_, 47–49, 123–24.


45 Nikolai Fedorov, *Filosofia obshchego dela* (Moscow, 1913; facsimile reprint Farnborough, UK: Gregg International, 1970), 1: 57. Subsequent citations of this source appear in parentheses within the text.

53. The unpublished story exists in four redactions; the detail of the airplane was added in 1898 (Russian National Library, Moscow, folio 386, book 31, 1–4).
54. Pierre Benoît’s potboiler *L’Atlantide* (Paris, 1908; trans. 1911) was a bestseller for years in Russia. Several issues of *Argus* between 1913 to 1916 contain articles about the reception of the novel. Vladimir Nabokov’s memoir *Look at the Harlequins* contains an amusing incident in which the protagonist’s fiancée, a belle of the former aristocratic community in Petersburg, declares that Benoît’s *L’Atlantide* is the only book she has read.
56. Leo Frobenius’s *Und Afrika Sprach!* (Hamburg and London: Hutchinson, 1882) was widely regarded as a bible by many seekers of esoterica in the colonial regions. Antoine de Saint-Exupéry’s *Le petit prince*, although written long after the cult of the aviator was firmly established, nevertheless belongs to the same triadic continuum between aviation, the Sahara, and mystical revelation.
57. As Vladimir Markov notes, Russian Futurists did not so much invent new technological metaphors as use them to distinguish themselves as the most forward-looking of the avant-garde movements, *Russian Futurism: A History* (Berkeley: University of California Press, 1968), 117–18.
60. For an authoritative version of the script and commentary, see Gisela Erbsloh,
NOTES TO CHAPTER 1


62 John Millner, in Kasimir Malevich and the Art of Geometry (New Haven, CT: Yale University Press, 1996), offers a comprehensive overview of the artist’s spatial consciousness; on the sets of Victory over the Sun, see pp. 85–87.
65 H. G. Wells, War in the Air (Lincoln: University of Nebraska Press, 2002), 96. Subsequent citations of this source appear in parentheses within the text.
66 Pierre Giffard, Adskiaia voina (St. Petersburg: V. V. Schwartz, 1908); Rudolf Martin, Mirovaia voina na vozdukhe (St. Petersburg: Soikin, 1911).
68 “Kartiny vozdushnoi voiny budushchego: voobrazhenie frantsuzskogo khudozhnika G. Lanosa,” Priroda i liudi 8 (1916): 198–99; Ia. Goldberg’s “Vozdushnyi flot v sovremennoi voine,” in Vokrug sveta 6 (1915): 88–104, was focused entirely on the new breed of heroes whose main significance was the defense of a besieged nation. The article was accompanied by a number of photographs of fighter pilots.
69 Quoted by Sherwin Simmons, Kasimir Malevich’s Black Square and the Genesis of Suprematism, 1907–1915 (New York: Garland, 1981), 39. Malevich’s own painting Simultaneous Death of a Man by Train and Airplane (1913) bears striking resemblance to an illustration of a balloon flight published in Argus (6 [1913]: 324). Although Malevich’s painting emphasized the dynamism of the collision, scattering pieces of sky, Earth, man, and machine into an undifferentiated whole, the magazine illustration displayed a remarkable distortion of perspective as well. It adopted the perspective of an infinitesimal creature at ground level, which views the combined terrestrial and aerial catastrophe in a cosmic scale.
70 For commentary on the poem, see Cooke, Velimir Khlebnikov, 35–36.
71 For a detailed discussion of government patronage and the development of astronomy at the turn of the century, see Loren Graham, Science in Russia and the Soviet Union (London: Routledge, 1993), 220–21.

75 On the synergy between cinema and science fiction in the pioneering moviemaker’s work, see David Robinson, *Georges Méliès: Father of Film Fantasy* (London: British Film Institute, 1993).


77 “Nauchnyi teatr,” *Priroda i liudi* 49 (1899), 785–92.

78 “Pis’ma iz-za granitsy. Berlin Urania,” *Priroda i liudi* 49 (1900): 768.

79 For a discussion on perceptions of social space and the threat to high culture in early Russian cinema, see Denise Youngblood, “Respect and Respectability,” *The Magic Mirror: Moviemaking in Russia, 1908–1918* (Madison: University of Wisconsin Press, 1999), 63–70.


81 Nikolai Morozov, *Zvezdnye pesni* (Moscow and Iaroslavl’: Zadruga, 1894).


83 Nikolai Morozov, *Na granitse nevedomogo: Nauchnye polufantazii* (Moscow: Zveno, 1910), 96. Subsequent citations of this source appear in parentheses within the text.


### 2. Transcending Time


5 “Podzemnaia zheleznaiia doroga,” *Niva* 3 (1901): 71–75.


7 Advertisements in *Birzhevye vedomosti* demonstrate that as the designs improved and costs dropped between 1890 and 1910, from around 200 rubles to 40, the bicycle came to be marketed as a personal commodity much like beautification products.


9 *Argus* published a report on the Fourth International Automobile Exhibition in St. Petersburg, the first of its kind in Russia. The car dealership was inaugurated for the same occasion. *Argus* 6 (1913): 442–45.

10 Several photographs of the Petersburg elite in their cars, posing in front of prominent national monuments such as the statue of Peter the Great, were published in *Niva* 18 (1901): 358.


17 Frank and Lillian Gilbreth, Fatigue Study (New York: Sturgis and Walton, 1916), 3, 121.
21 The first review of Bellamy’s novel, “Novaia fantaziia na staruiu temu,” Vestnik Evropy 4 (1890): 553–87, ridiculed the author’s “naive” ideas about a utopian future. Subsequently, the journal reviewed German comedic “sequels” to Bellamy’s novel, such as Mitteilungen aus dem Jahren 2001 und 2002 by Conrad Wilbrandt (Berlin, 1891; Vestnik Evropy 10 [1891]: 857–58) or Ein Rückblick aus dem Jahre 2037 by Ernst Müller (Berlin, 1892; Vestnik Evropy 8 [1892]: 858–62).
24 Alexander Belomor, Adskaya voina 18?? goda (St. Petersburg: Soikin, 1910), 12. Subsequent citations of this source appear in parentheses within the text.
27 Simeon Belsky, Pod kometoi. Zapiski ochevidtsa (St. Petersburg: Pechatnyi dvor, 1910), 147.
29 Valery Bryusov, “Respublika iuzhnogo kresta,” ibid., 5. Subsequent citations of this source appear in parentheses within the text.
Vokrug sveta 16 (1904): 278 carried a particularly vivid example of the similarity of the two illustrations.

An advertisement for a gramophone in 1895 shows that it cost 600 rubles. Niva 38 (1895): 919.


“Kinematograf i nauka,” Priroda i liudi 3 (1898): 45.

Youngblood documents several instances when such juggling with time would turn into an immensely enjoyable spectacle, the operator and pianist competing with each other to produce the most sensational effects. Denise Youngblood, “Respect and Respectability,” The Magic Mirror: Moviemaking in Russia, 1908–1918 (Madison: University of Wisconsin Press, 1999), 43–45.


Friedrich Nietzsche, Thus Spoke Zarathustra, trans. R. J. Hollingdale (Baltimore: Penguin, 1975), 139.


Ibid., 44. Subsequent citations of this source appear in parentheses within the text.


Bergson, Creative Evolution, 181–82 and 194.

Lenin spoke out against Mach and other “mystics” who were distorting people’s faith in an absolute objective conception of time in Materializm i empirio-kritizism (Moscow: Gosizdat, 1931), 176 and 189. One of Bugaev’s most vituperative articles on relativity and intuition targets the Bergsonian “synthetic” perception of time, which he claimed were “destroying the bases
of centuries-old analytical mathematics.” “Matematika i nauchno-filosofskoe
sozertsanie,” Voprosy filosofii i psikhologii 85 (1907): 697–717.
50 See N. Lossky, “Nedostatki gnossologii Bergsona i vliianie ego metafiziki,”
Voprosy filosofii i psikhologii 2 (1913): 224–35; B. N. Babynin, “Filosofia Berg-
51 Hilary Fink, Bergson and Russian Modernism (Evanston, IL: Northwestern
University Press, 1999) and Elaine Ruskino, “Acmeism, Post-Symbolism, and
continuing presence of Bergson’s ideas in the literary theory of Viktor Shklov-
sky and Yury Tynianov in “Bergson and Russian Formalism,” Comparative Lit-
terature, 2 (1976): 109–21. Curtis demonstrates that the Formalist concepts of
estrangement and automatization, among others, derive from Bergson.
52 P. D. Uspensky, Tertium Organum, trans. Claude Bragdon (New York: Vintage,
budushchego,” Vokrug sveta 12 (1903): 178–85. Subsequent citations from the
English original appear in parentheses within the text.
54 Velimir Khlebnikov, “The Trumpet of the Martians,” Collected Works, Vol. 1:
Letters and Theoretical Writings, trans. Paul Schmidt (Cambridge, MA: Har-
55 In a 1909 article in Le Figaro, Marinetti first proclaimed speed as the most
potent metaphor for the Futurist movement: “We say that the world’s mag-
nificence has been enriched by a new beauty: the beauty of speed. A racing car
. . . is more beautiful than The Victory of Samothrace . . . . [W]e cooperate with
mechanics in destroying the old poetry of distance and wild solitudes, the
exquisite nostalgia of parting, for which we substitute the tragic lyricism of
ubiquity and omnipresent speed.” Filippo Marinetti, Selected Writings, trans.
56 Khlebnikov, Collected Works, Vol. 1, 392–410. Subsequent citations of this
source appear in parentheses within the text.
57 Georges Sorel, Reflections on Violence, trans. T. E. Hulme (New York: Huebsch,
1911). Subsequent citations of this source appear in parentheses within the
text.
58 Alexander Bogdanov, Iz Psikhologii obshchestva, 4th ed. (St. Petersburg: Doro-
vatskii and Charushnikov, 1908), 31, 78, and 143.
59 Bergson, Creative Evolution, 67.
60 Sorel, Reflections, 57–58.
61 Alexander Bogdanov, Bor’ba za zhiznesposobnost’ (Moscow: Institut pereliva-
niia, 1927), 145.
NOTES TO CHAPTER 3

63 Nikolai Fedorov, Vecher v 2217 (Moscow: Sytin, 1906), 5. Subsequent citations of this source appear in parentheses within the text.

3. Generating Power

1 Lenin’s notebooks from 1908, when he toured Germany, are replete with observations of the changes electrification had wrought in daily life. See V. I. Lenin, Zapisnye knigi 1907–1917, Polnoe sobranie sochinenii v 45 tomakh (Moscow: Gosudarstvennoe izdatel’stvo politicheskoi literatury, 1958), vol. 22.
3 L. Dreier, Zadachi i razvitie elektrotekhniki (Moscow: Gosudarstvennoe izdatel’stvo, 1919), 8.
17 Quoted in ibid., 8.


26 Archives of the National Public Library, St. Petersburg, file 53, folio 39 and file 79, folio 46.

27 *Niva* 32 (1900): 218.

28 *Mark Twain’s Notebooks and Journals*, ed. Frederick Anderson (Berkeley: University of California Press, 1979), 32 and 149.


30 The only exception is a popular novel, Vladimir Chikolev’s *Electrical Tale: It Never Happened, but It Is Not Imaginary* (Elektricheskii rasskaz: Ne bylo, no i ne vydumka [Moscow: Sytin, 1895]), which includes long descriptions of gadgets—obvious extrapolations of those advertised in the press—and constructs a simple portrait of urban comfort.


33 The association of electricity with gold also attests to a new category of speculation about purported parapsychological applications of electricity that came into vogue in Russia in the late 1890s. Alchemy—which means transmutation—involves creating gold by transforming base metals through fire. This ultimate substance, medieval scientists believed, was a panacea for solving all ills including old age and death. The writings of some nineteenth-century parapsychologists who hailed electricity as the magic fire that alchemists had been unable to craft were first translated into Russian in the early 1890s. The
celebrated Victorian mesmerist William Carpenter, who contended that electricity would unlock the secrets of transubstantiation, claimed that it could not only turn base metals into gold but also change the body to immortal spirit. Carpenter’s book Mesmerism and Spiritualism Historically and Scientifically Considered (New York: Appleton, 1890), translated in 1892, created equally wide ripples in popular science journals and “thick” magazines targeted at the discerning intelligentsia. The revival of Galvanic perceptions of electricity, along with the view that it embodied the alchemist’s fire, even permeated the discourse of academic journals. Issues of Philosophy and Psychology (Voprosy filosofii i psikhologii), the prestigious scholarly publication, printed an article on galvanic reanimation in which the author specifically recommends golden electrical circuits (A. A. Glagolev, “Gal’vanizm i bessmer-tie,” Voprosy filosofii i psikhologii 19–20 [1894]: 1–19, 1–26).

35 Vladimir Shelonsky, V mire budushchego. Moscow: I. D. Sytin, 1892.
37 In real life, Bryusov retained a paranoid fear of the invisible occult powers of electricity. Vladislav Khodasevich, noted that he always switched the lights off before exiting a room (“Bryusov,” Sobranie sochinenii v 4 tomasakh [Moscow: Soglasie, 1997], 4: 32).
39 Nikolai Shelgunov, Vospominaniia (Moscow and Petrograd: Gosudarstvennoe izdatel’stvo, 1923), 122.
NOTES TO CHAPTER 4

46 Quoted in ibid., 116.
51 Andrei Platonov, Elektrifikatsiia (Voronezh: Proletarskaia literatura, 1921), 3 and 9.
54 Afanas’ev, Poeticcheskie, 2: 227.
55 Coopersmith documents that this was a stated principal goal of GOELRO, 163.

4. Creating the Human
6 Masing-Delic, Abolishing Death, 19.
10 On this triangular debate concerning the ethical implications of the *Origin of the Species*, see Loren Graham, *Science in Russia and the Soviet Union* (London: Routledge, 1993), 64.
17 Haeckel cites Thomas Huxley, Rudolf Virchow, William Siebold, Jacob Molechott, and Carl Büchner among others in support of his monistic view of nature. *Last Words on Evolution* refers to Rudolf Virchow’s experiments on seeds as “an effort to bring about unity in scientific medicine” (58); Siebold’s research on unicellular organism behavior; and Huxley’s “protists,” the protoplasmic replicating factor, as proofs of “the psychic unity of the body and soul” (59).
18 V. I. Lenin, *Materializm i empirio-krititzm* (Moscow: Gosizdat, 1931), 254. Indeed, all of Haeckel’s major works were translated into Russian, under the titles *Sovremennye znaniia o filogeneticheskom protsesse* (1899); *Mirovozzrenie Darwina i Lamarka* (1909); *Proiskhozhdenie cheloveka* (1919); *Mirovye zagadki* (1899); *Estestvennnaia istoriiia mirotvoreniiia*, 2 vols. (1914); and *Monizm* (1924).
19 Preface to L. Gellenbach, *Individualizm v svete biologii i sovremennoi filosofii s predisloviem V. Solov’eva* (St. Petersburg: Soikin, 1874), xii, xix–xxi. For a par-
particularly vituperative pro-Darwinian review of Solov’ev’s interpretations, see *Vestnik Evropy* 2 (1884): 848–51.


22 Nikolai Grot, *Psikhologia chuvstovani v eia istorii i glavnykh osnovakh* (St. Petersburg: Imp. Akademiia nauk,1880) and *O nauchnom znachenii pessimizma i optimizma* (Moscow: Kushnerov, 1884). Both monographs were reviewed in *Vestnik evropy*.


25 *Vorlesungen über die Menschen- und Tierseele* (1863) was translated by the biologist E. Kemnits in 1865. The noted psychologist and uncle of the avant-garde artist, Vladimir Kandinsky, also translated *Über die Aufgabe der Philosophie in der Gegenwart* (1874). Both translations were published in the periodical *Znanie* in serial form over four issues, 6–10, in 1876. The thick journal *Russkoe bogatstvo* published, during 1887 and 1888, excerpts from *Der Spiritismus* (1879) and *Ethik* (1886). Wundt’s works continued to be translated into Russian through the 1910s, as the bibliography section of *Voprosy filosofii i psikhologii* shows. In 1912 alone, there were two new translations titled *Vvedenie v psikhologii*, one by N. N. Lange published in Odessa and the other by N. Samsonov in Moscow.

26 *Entsiklopedicheskii slovar’ Brokgauza-Efrona* (St. Petersburg: Brokgauz, 1892), 7: 455.

27 See, for example, the heated discussions around Cesare Lombroso’s psychological study of criminality and genius (a long article was devoted to the Russian translation of his *Genia et Folio [Genial’nost’ i pomeshatel’stvo]*, in *Vestnik evropy* 12 [1885]: 913–23); a number of subsequent articles dealt with the “anatomy” of genius and creativity: see, for example, the review of Felix Helment’s *De l’instinct et de l’intelligence* (Paris, 1880; reviewed 11 [1881]: 898–903). Eugene De Robertry’s *L’inconnaissable, sa metaphysique, sa psychologie* (1889) was widely advertised in both *Vestnik evropy* and *Voprosy filosofii i psikhologii*. Reviews of P. Mantegazz, *Fiziolohgii nenavisti*, trans. N. Leinenberg (Odessa, 1889), and I. A. Verminshev’s *Dushegub. Fiziopsikhicheskii eksiz* (Tiflis, 1889), appeared side by side with those of Cesare Lombroso’s *Liubov’ u pome-
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shannykh (Odessa, 1889) and N. Ia. Danilevsky’s Dusha i priroda (Kharkov, 1889).

28 The psychologist P. I. Kovalevsky’s Osnovy mekhanizma dushevnoi deiatel’nosti (1885) was reviewed extensively in Vestnik evropy 12 (1886), 924–28.


30 Sluchevsky’s science fiction prefigures the real experiments of fin de siècle aesthetes who imbibed various intoxicating substances in order to observe their effects on cognition.

31 Georgy Chelpanov, one of the founding fathers of Russian psychology, dedicated a substantial study to locating the exact spatial seat of the parallel universe hypothesized by Wundt. See his Mozg i dusha (Moscow: Dumnov, 1909).


In 1904, Bekhterev started the first journal of experimental psychology in Russia, Vestnik psikhologii, kriminal’noi antropologii i gipnoza. In 1907, he founded the Psychoneural Institute in St. Petersburg, followed by the Moscow Institute of Psychology in 1912. He attended Wundt’s seminars on physiological psychology at Leipzig and trained with Jean Martin Charcot at Salpêtrière. For detailed accounts of Bekhterev’s place in Russian psychology and philosophy, see Alex Kozulin, Psychology in Utopia: Toward a Social History of Soviet Psychology (Cambridge, MA: Harvard University Press, 1984), 8–50. For a discussion of Bekhterev’s theories on mass psychology and his ideological position before and after the revolution, see David Joravsky, Russian Psychology: A Critical History (Oxford: Oxford University Press, 1989), 271–81.

33 Haeckel, Last Words, 114.

34 Bekhterev’s magnum opus, Kollektivnaia refleksologiia (Moscow: Akademiia nauk, 1921), which became a landmark text of Soviet psychology, retained and elaborated upon many of these early ideas.

35 Many parapsychologists cited the discovery that matter and energy are transmutable in order to validate supernatural phenomena. Naum Kotik’s radioactive-brain-energy theory was advanced in connection with exactly such an inquiry, Emanatsii psikhofizicheskoi energii: Eksperimental’noe issledovanie iavlenii mediumizma, iasnovideniiia i myshlennogo vnusheniia v sviazi s voprosom o radioaktivnosti mozga (Moscow, 1907). Both Kotik and his disciple Lazarev’s work is discussed by Michael Hagemeister, “Russian Cosmism in the 1920s and Today,” The Occult in Russian and Soviet Culture, ed. Bernice G.
Rosenthal (Ithaca, NY: Cornell University Press, 1997), 194. Although Beknev’s theory was proposed in Soviet times as part of a treatise on the improvement of production, it clearly belongs to the above traditions.


38 Nikolai Fedorov, Filosofilia obschego dela (Moscow, 1913; facsimile reprint Farnborough, UK: Gregg International, 1970), 2: 277. For a description of the actual attempts made by the Fedorovtsy (followers of Fedorov) to resurrect the constituent atoms from the remains of the forefathers, see Hagemeister, “Russian Cosmism in the 1920s and Today,” 190.


40 Ibid., 35.

41 Ibid., 146–70.

42 Ibid., 164.

43 Ibid., 146. Tsiolkovsky refers here to Helmholtz—who would appear in his science fiction as well—as the inspiration of this model.

44 For a detailed commentary on panpsychism, see V. V. Kaziutinsky, “Kosmicheskaiia filosofiiia K. E. Tsiolkovskogo,” Filosofiiia russkogo kosmizma (Moscow: Alitea, 1996), 120–21.

45 Ibid., 164.


49 Tsiolkovsky, Put’ k zvezdam, 71.

50 Ibid., 77.


55 Such a psychophysiological association of nakedness with spiritual purity and democratic sensibilities illustrates a peculiar facet of the Russian intelligentsia’s emerging preoccupation with integrated mind-body development. From literary giants such as Leonid Andreev and Maksimilian Voloshin to the artist and actor Ivan Miasoedov, who published the Manifesto of Nudity in 1912, nudism continued to command a small but significant following among the Russian avant-garde well into the Soviet period. The Moscow nudist society continued to organize meetings until 1922. See Bowlt, “Body Beautiful,” 46.
63 Alexander Bogdanov, Bor’ba za zhiznesposobnost’ (Moscow: Institut perelivaniia, 1927), 97, 104. Subsequent references in parentheses.
64 Boyle’s Free Inquiry into the Vulgarly Received Notion of Nature (1665), where he first advanced this model, is discussed by Barbara Kaplan in “Divulging of Useful Truths in Physick”: The Medical Agenda of Robert Boyle (Baltimore: Johns Hopkins University Press, 1993), 71.

For these and other case studies of the mechanistic impulse in Soviet psychology, see Raymond Bauer, *The New Man in Soviet Psychology* (Cambridge, MA: MIT Press, 1952), 81.

Aron Zalkind, *Ocherki kul’tury revoliutsionnogo vremeni* (Moscow: Gosizdat, 1918), 100–103.


Emmanuil Enchman, *Teoriiia novoi biologii i marksizm* (Petrograd, 1923), 22.


Aleksei Gastev, *Vosstanie kul’tury* (Kharkov: Kozhukov, 1923), 22.


In the manifesto “On Weltanschauung,” “O mirovozzrenii,” Matiushin articulated a nonobjective epistemology of creative activity, according to which man should recreate himself in the image of nature instead of merely observing it (1922; rpt. *Organica*), 18.


**Afterwor(l)d**


Further Reading

Other than Yevgeny Zamyatin’s *We*, which emerged as a cult classic in the late 1980s and has been revised and retranslated twice in the last two decades, early Russian science fiction is accessible to English-speaking readers only in a fragmented, selective way. Even landmark texts such as Alexander Bogdanov’s *Red Star* and Alexi Tolstoy’s *Aelita* did not get translated until the mid-1980s, when Mikhail Gorbachev’s perestroika was already announcing the collapse of the Soviet Union as everyone knew it. In the past decade, a resurgence of critical interest in Velimir Khlebnikov and Andrei Platonov has corresponded with the publication of many works previously unavailable in English. Other than these particular authors and texts, however, only select examples of early Russian science fiction can be found in collections, often buried among Gothic tales and other works of metaphysical and social fantasy. Vladimir Odoevsky’s *4338*, the first example of a technological utopia in Russian literature, appears in fragments; Valery Bryusov’s “Republic of the Southern Cross” and Alexander Kuprin’s “Liquid Sun” are easily accessible, but not Bryusov or other modernists’ prolific experiments in science fiction; Konstantin Sluchevsky, a prominent metaphysical poet, has not made his way into any collection; and Konstantin Tsiolkovsky’s stories exist only in an out-of-print Soviet translation from 1960, which was published soon after he was posthumously canonized as the father of the Space Program. Clearly, systematic and comprehensive translations of early Russian science fiction are just as critically needed as studies of its remarkable emergence. The following list of sources available in English represents only a fraction of the works examined in this book.

**Anthologies**


*Pre-Revolutionary Russian Science Fiction (Seven Utopias and a Dream)*. Ann Arbor, MI: Ardis, 1982. Translated by Leland Fetzer.

**Individual Authors and Works**


**Essays and Manifestoes**


**Visual Media**

Aelita, directed by Yakov Protazanov, studio Mezhrabprom-Rus’, 1924.


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