Evolution in Times of Revolution: Darwinism, Nature, and Society in the Soviet Union

By

Mirjam Luisa Voerkelius

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

History

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Yuri Slezkine, chair
Professor Victoria Frede
Professor Thomas Laqueur
Professor Eric Naiman

Fall 2018

Abstract

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Darwinism, the Soviet Union claimed, had found its second home in revolutionary Russia. While the Tsarist government viewed Darwinism with trepidation and suspected it of being linked to atheism and revolution, the Bolshevik revolutionaries embraced it for these very reasons. Despite this accepted narrative, the story of evolutionary theory in Russia and the Soviet Union is more complex. First, not all supporters of Darwin in pre-revolutionary Russia were materialists. Second, Darwinism posed vexing problems to Bolsheviks: although they considered Darwinism a cornerstone of their materialistic, scientific, and revolutionary worldview, this dissertation argues that Soviet scientists and ideologues struggled to reconcile Darwin's gradualist theory of evolution that decentered humankind with their Marxist theory of revolution. This tension between evolution and revolution is apparent from the history of the Moscow State Darwin Museum, an educational and research institution founded in late Imperial Russia in 1907, which is the setting of this dissertation.

Based on archival research conducted in Russia, Germany, and the US, this study analyzes the conflicted history of Darwinism in twentieth-century Russia and the Soviet Union, spanning both sides of the revolutionary divide of 1917. The Darwin Museum as a hub of Darwin-inspired research and dedicated to popularizing evolutionary theory both shaped and reflected the engagement with the British naturalist and his theory in Imperial and Soviet Russia. Its history underscores how much richer the Soviet reception of Darwin was than the well-studied case of Lysenko's "creative Darwinism." From comparative psychology to cryptozoological research on the Yeti, the scientists, environmentalists, artists, and popularizers of science linked to the museum puzzled over the conundrum evolutionary theory posed in the political and ideological context of revolutionary Russia. In the end, researchers invoked Darwin but diverged from key aspects of his theory. They criticized the notion that evolution develops gradually, rather than in leaps or revolutions, and they argued that *homo sapiens* as a species capable of wielding tools and transforming the environment is qualitatively different from other beings. Yet culture in the Soviet Union was not monolithic. Parallel to advancing an anthropocentric worldview during Stalinism that aligned with the Bolsheviks' aspirations of mastering nature, the Darwin Museum was a center of environmental activism. As

seen through the research conducted under the aegis of the Darwin Museum, this dissertation argues for the complexity of the Soviet scientific and theoretical debate on the relationship between humanity and the natural world, which informed the interaction with the environment. In sum, the Darwin Museum with its long history functioned as a key site for research, for shaping future generations of biologists and nature protectionists, and for negotiating the close but conflicted relationship between evolutionary theory and Bolshevik revolutionary ideology.

To Tim and Elias

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Acknowledgments

Without the vital support and contributions of family, friends, advisors, and institutions, this dissertation would have never been completed. Moving back and forth across the Atlantic to conduct archival research in Russia, Germany, and the US would not have been possible without the generous assistance from Berkeley's history department, the Berkeley Institute of Slavic, East European, and Eurasian Studies, the German Academic Exchange Service, and the traineeship opportunities for graduate students at the Moscow Higher School for Economics. For financial assistance in writing up the dissertation I would like to thank the Doris G. Quinn Foundation and the Max Planck Institute for the History of Science in Berlin, where Lorraine Daston created an unmatched working environment.

Before any dissertation begins, there is the daunting task of choosing a dissertation topic. Yuri Slezkine and Victoria Frede gracefully listened to a variety of different ideas before he nudged me to pursue this one. For the ability to ask the right questions, his unfailing guidance, generous mentorship, the importance he attributes to community, and great patience reading through drafts, I am most grateful. Highly admirable was Victoria Frede's sisyphean commitment to eliminate Germanisms from my English prose. I am tremendously grateful for her dedication as a teacher, her careful edits, and her incisive analyses of where my argument was lacking. Tom Laqueur has been an inspiring reader and teacher as well, whose perspective and insights have greatly helped improve the text. And Eric Naiman generously met every week for a semester to discuss science fiction.

Researching this project has taken me to archives and libraries in Moscow, Berlin, Jena, Philadelphia, Washington DC, and, of course, Berkeley. In each place, the help of archivists and librarians has been indispensable. At the Moscow Darwin Museum, the director Anna I. Kliukina welcomed me generously, provided me with copies of the museum's publications, and allowed me to work in the archive. There, Irina Petrovna Kalacheva provided me with my own desk, helped me understand the archive, and swiftly brought the documents. I could not have asked for better working conditions and am deeply grateful. Varavara Mironova likewise welcomed me with open arms and was full of ideas. Thank you! At the archive of the Academy of Sciences in Moscow, Irina Georgievna Tarakanova, too, was particularly generous with her time and advice. Among librarians, Ellen Garske at the Max Planck Institute for the History of Science and Liladhar Pendse at Berkeley deserve my special thanks. For providing me with a roof over my head and company, I am indebted to Svetlana and Natalia, as well as the marvelous Erica in D.C. and Vanessa in Paris. For cheerful hours while researching in Moscow, I thank Natalie, Angelina, Anna, Maria, Mohammed, Seth, Samira, and Senne.

At Berkeley, I found both a home away from home and formed new friendships. Lindy, Kim & Liz, and Bobby & Tito hosted me on several occasions and have been important friends outside of the university; Lauren graciously hosted the entire family, including its newborn member, as have Kiki and Puh in Berlin. Within the department, I was fortunate to be part of a lively and supportive community of graduate students. While I joined the lunchers at the circle late, the tightly knit *kruzhok* collective is a crucial lifeline for all Russianists at Berkeley from the day we enter the program. Members of the *kruzhok* of all generations have been model colleagues and friends. Many have taken

time out of their busy schedules to offer their advice and perspective on all things academic – my thanks go out in particular to Alexis, Bathsheba, Brandon, David, Katherine, Nicole, and Tatiana. Some have also shared in the joys of life and offered their much cherished friendship and assistance on other occasions, from walks on the fire trail, savoring the view of the Bay, to providing shelter, cooking up dinners, talking and listening: Agnieszka, Brandon, Clare, Emiliana, Emily, Hilary, Jason, and Joy. I am grateful to the participants at the workshops in Erlangen, Basel, and the Berkeley *kruzhok* for discussing early drafts of chapters, to Christine von Oertzen for sharing her knowledge on developmental psychology, and to Victoria Smolkin and Eva Maurer for kindly answering my queries. Heartfelt thanks are due to Clare, German, Hilary, and Jason for their support and careful reading of drafts, and to Brandon, Erica, Johannes, Joy, and Julia for offering to do the same. My thanks go out to Harrison, without whom this dissertation would have never been filed. The list of names of people who, in ways big and small, contributed to making the past six years memorable is long. It includes my parents who visited me wherever I went and have always been supportive. Finally, I was lucky to meet Tim, who went far beyond the call of duty in helping see this project through. He took care of a newborn, moved across the Atlantic, cooked, and read several drafts of the dissertation. I sincerely hope he will one day write a book in German so that I can return the favor. This dissertation is dedicated to Tim and all generations of my family.

Introduction

In 1938 the Soviet artist Aleksei N. Komarov (1879-1977) painted a series of snow grouse in their natural habitat for display as part of the permanent exhibition at the Moscow State Darwin Museum. Like their close relatives from the phasianidae family of the order of the galliformes, such as turkey, chicken, or pheasants, grouse are no acrobats of the sky. While able to fly and glide, they mostly remain grounded, and Komarov depicted them accordingly. In his portraits of the snow grouse, also known as ptarmigans or *lagopus*, he set out to illustrate the adaptation of species to their environment. Komarov traced the transformation of the coloring of the birds' feathers through the seasons, corresponding with the changing shade of the grasses, brushes, and trees among which grouses dwell.[1]

Commissioned for the Moscow State Darwin Museum, Komarov's portrait series captured Darwinism's materialism, which the Bolsheviks embraced wholeheartedly. Darwin himself commented on the seasonal transformation of the grouse that Komarov, perhaps not coincidentally, depicted. In *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (1859) Darwin wrote:

> When we see […] the alpine ptarmigan white in the winter the red-grouse the color of heather, we must believe that these tints are of service to these birds […] in preserving them from danger. […] [Grouse] are known to suffer largely from birds of prey; and hawks are guided by eyesight to their prey […]. Hence natural selection might be effective in giving the proper colour to each kind of grouse, and keeping that colour when once acquired, true and constant.[2]

In Darwinian terms, the pure white plumage of the three ptarmigans Komarov depicted as crowded together amidst an icy, pristine winter landscape enhanced the birds' chances of survival. It is a depiction of crypsis, strategies such as camouflage that reduce the risk of being spotted by predators (or prey). Specimens who remain undetected are more likely to survive, to reproduce, and to successfully raise their offspring, passing their characteristics (with possible modifications) on to the next generation.[3] The carefully

[1] For reproductions of Komarov's paintings, see the collected works of museum founder Aleksandr Kots: A. F. Kots, Sobranie sochinenii volume 3: Gosudarstvennyi Darvinovskii muzei v gody Velikoi Otechestvennoi voiny: K 70-letiiu Pobedy v Velikoi Otechestvennoi voine (Moscow: GDM, 2015), 133; 135.

[2] Charles Darwin, "Chapter IV: Natural Selection," in *The Origin of Species. Sixth edition, with Additions and Corrections*. London, John Murray, 1872: 62-105. Quote: 66. http://www.amnh.org/our-research/darwin-manuscripts-project/darwin-publications-books/the-origin-of-species-6th-edn-1872-freeman-391.

[3] In the sixth edition of *The Origin*, Darwin corrected misrepresentations of his theory and underscored that natural selection does not "induce[…] variability." Charles Darwin, "Chapter IV: Natural Selection," in *The Origin of Species. Sixth edition, with Additions and Corrections*. London, John Murray, 1872: 62-105. Quotes: 63f. http://www.amnh.org/our-research/darwin-manuscripts-project/darwin-publications-

arranged bouquet of colors in every painting of Komarov's series on crypsis represented the seeming perfection of organisms. Darwin's materialist theory explained the finely calibrated relationships within nature as resulting from natural selection, rather than the divine design of the universe, as natural theologians contended.[4] As visitors of the Darwin Museum learned, Darwinism thus undermined the idea of God as creator.[5]

The Darwin Museum, where Komarov worked, although established a decade prior to the October Revolution of 1917, found enthusiastic patrons among the Bolshevik revolutionaries who understood the Soviet Union to be "the second homeland of Darwinism." [6] The museum was, and is to this day, a forum for scientists, environmentalists, and artists like Komarov, as well as popularizers of science, specifically Darwinism. Originally, the paintings, pieces of taxidermy, and skeletons were part of the private collection of Aleksandr F. Kots (1880-1964). By donating his collection for the purposes of creating a university museum, Kots gave life to the Darwin Museum. Initially, it was intended to serve the Higher Courses for Women in Moscow (1907). After the Soviet revolution the institution became a state museum (1923). Like the snow grouse, the museum adapted quickly and successfully to the changed environment. In the following decades, it would define its aim as the "explication and dissemination of the basis of evolutionary theory and Darwinism as the scientific basis of the Marxist worldview in scientific and artistic ways."[7]

An internal guide likely from the 1940s describes a tour of the two floors across which the museum's exhibition stretched. In line with the institution's general mission to integrate artwork, the exhibition featured paintings and sculptures as well as skeletons and pieces of taxidermy. Entering the museum, visitors first learned about "evidence of evolution," including the evolution of humankind. Sculptures of extinct megafauna, like the mastodon, epitomized the ancestors of animals populating the planet today, notably elephants: two taxidermied specimens, an Indian and an African elephant, represented the extant species. Skeletons of a human and apes invited guests to ponder morphological similarities – and differences – in the section on human evolution, as did photographs showcasing the museum's own research on comparative psychology. Moving to the exhibition on the second floor, the focus shifted from evolution as a fact to ways of explaining evolution. Along with Darwin, the museum honored a range of theorists of evolution in a hall of fame, including Georges-Louis Leclerc Comte de Buffon (1707-1788), Johann Wolfgang von Goethe (1749-1832), Jean-Baptiste Lamarck (1744-1829),

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books/the-origin-of-species-6th-edn-1872-freeman-391; Ernst Mayr emphasized the important point that Darwin was, in today's understanding of Darwinism as defined by the theory of natural selection, not a true Darwinist himself, for he repeatedly "allowed for the affect of use and disuse and an occasional direct influence of the environment," à la Lamarck. Ernst Mayr, "Darwin's Five Theories of Evolution," in *Darwinian Heritage*, ed. David Kohn (Princeton: Princeton University Press, 1985), 755-772, here: 768 and 770.

[4] On natural theology and evolutionary theory in the nineteenth century before the publication of the Origins in 1859, see: Peter Bowler, *Evolution: The History of an Idea: Third Edition, Completely Revised and Expanded* (Berkeley: University of California Press), 96-140; William Paley, *Natural Theology: Or, Evidence of the Existence and Attributes of the Deity, Collected from the Appearances of Nature* (London: R. Faulder, 1802).

[5] GDM f. 19 op. 1 ed. 1429, l. 110.

[6] "Darvinizm," *Bol'shaia Sovetskaia Entsiklopediia* (Moscow: Izdatel'stvo "sovetskaia entsiklopediia," 1952), 370-378, quote: 371.

[7] GDM f. 1 ed. 263 (OF 12430 -90), ll. 1.

Étienne Geoffroy Saint Hillaire (1772-1844), Georges Cuvier (1769-1832), Ernst Haeckel (1834-1919), Hugo De Vries (1848-1835), Kliment A. Timiriazev (1843-1920), Paul Kammerer (1880-1926), Ivan V. Michurin (1855-1935), and Trofim D. Lysenko (1898-1976). Visitors learned about various, often contradictory theories, including one proposal asserting that acquired characteristics are heritable: environmental influences and the use or disuse of organs shape organisms in ways that are heritable, as championed by Lamarck, Kammerer, and, in the Soviet Union, Michurin and Lysenko. They also encountered the opposite perspective, presented by geneticists, who argued for genetic mutations and thus made the case for "hard heredity."[8] Finally, the museum introduced visitors to Darwin's theory of natural selection, as depicted for example in Komarov's series on the ptarmigans. Before leaving the museum, visitors passed busts of Marx and Engels to remind them of the latters' close connection with Darwin.[9]

On its surface, the story of the Darwin Museum and its exhibitions confirms well-known narratives about the Russian and Soviet reception of Darwinism. By the time Kots founded the museum of biology and evolutionary theory (1907), the main tenets of the reception of Darwinism in Imperial Russia were well established.[10] The Tsarist state viewed Darwinism with trepidation, while members of the intelligentsia and important scientists welcomed it with enthusiasm, although with important modifications. Typically, even those who embraced Darwinism rejected the influence of Malthus on his theory, that is, the emphasis on struggle. As the excellent studies of Daniel Todes and Alexander Vucinich on the reception of Darwinism in Imperial Russian culture and science have shown, Russian authors advanced instead the idea of mutual aid and cooperation as a factor in evolution.[11]

The museum's background complicates this history in important ways. A storyline that is well known and which the Soviet Union embraced wholeheartedly is that members of the Russian intelligentsia, seeking to undercut the religious culture on which the legitimacy of autocracy rested, promoted materialism, including Darwinism. Conservative and religious circles, meanwhile, reacted antagonistically, especially to

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[8] In the early twentieth century – prior to the development of the modern evolutionary synthesis in the 1930s and 1940s – genetics had been one of several challenges to Darwinian evolutionary theory, proposing evolution by leaps (saltations), which stood in tension with Darwin's gradualism. Bowler, *Evolution*, 224ff. V. B. Smocovitis, "Unifying Evolutionary Synthesis and Evolutionary Biology," *Journal of the History of Biology* vol. 25. no. 1 (1992), 1-65.

[9] GDM f. 1 ed. 263 (OF 12430 -90), ll. 1-11.

[10] The Darwin Museum today states 1907 as its founding date, for this was when the Higher Courses for Women hired Kots and he moved his collection to the Courses to use it for teaching purposes. *Estestvenno-nauchnye muzei Rossii,* pod. red. A. I. Kliukinoi (Moscow: Gosudarstvennyi Darvinovskii Muzei*,* 2008), 65; Kots himself sometimes referenced 1896 (GDM f. 1 op.1 ed. 180 (OF-10141/52), l. 1.), sometimes 1905 (GDM f. 1 op. 1 ed. 172 (OF-10141/55), and at other times 1907 (GDM F. 1 op. 2 (KP OF-15845/719), l. 1.) as founding dates. In part, this reflected the fact that founding the museum was a process. Given Kots' claim that he founded an institution unique in its focus on evolution there certainly was an incentive to claim an early founding date since Ernst Haeckel established the Phyletic Museum in 1907 (the museum opened its doors to visitors in 1908).

[11] Daniel P. Todes, *Darwin Without Malthus: The Struggle for Existence in Russian Evolutionary Thought* (New York: Oxford University Press, 1989); Alexander Vucinich, *Darwin in Russian Thought* (Berkeley: University of California Press, 1988); Daniel P. Todes, *Darwin Without Malthus: The Struggle for Existence in Russian Evolutionary Thought* (New York: Oxford University Press, 1989); Alexander Vucinich, *Darwin in Russian Thought* (Berkeley: University of California Press, 1988).

Darwin's *The Descent of Man of Man, and Selection in Relation to Sex* (1871).[12] While there is certainly a lot of truth to this narrative, the Darwin Museum exemplifies that spiritualist worldviews and science were not necessarily locked in an antagonistic battle. Like prominent members of the cultural elites, among them poet Andrei Belyi, the museum's founders were influenced by Rudolf Steiner's anthroposophy, an orientation that also shaped their museum project. Soon after the Bolshevik October Revolution, however, when the state targeted anthroposophist associations along with other spiritualist groups and religions, the Darwin Museum engaged in its own act of crypsis and hid its past, presenting the institution as a potent medicine against the "opium" of religion.[13]

Under Soviet rule, Darwinism became a key tenet of official ideology. The importance the Bolsheviks as Marxists attached to materialism and Darwinism as a materialist science is well established.[14] Historians have discussed Darwinism in the context of the efforts on the part of the revolutionaries to undermine religion and disseminate an enlightened, scientific worldview, a key aim of the Darwin Museum in the Soviet period.[15] What has undoubtedly attracted the greatest attention among historians, however, is what its proponents called "Soviet creative Darwinism," better known as neo-Lamarckian Michurinist Lysenkoism. Lysenko claimed that acquired characteristics are inheritable, allowing humankind to shape the evolution of organisms according to their needs. Geneticists, on the other hand, made the case for "hard heredity," in which variation is caused by mutations. In the late 1930s/1940s, the museum represented both sides of the "science war" in biology, but once genetics was outlawed in 1948, Lysenko dominated the exhibition. Historians have highlighted the dynamics of the "science war," uncovered the astonishing degree to which Stalin was personally involved. The scholarship has shown that Stalin even edited Lysenko's decisive 1948 speech, toning down its politicized rhetoric. Archival research has elucidated the connections between Lysenko's victory and broader power struggles among leading Bolsheviks, and scholars have highlighted the importance of the onset of the Cold War for the defeat of the geneticists. Arguing that Lysenko's triumph was not predetermined by ideological

[12] See chapter 1.

[13] On anthroposophy in the Russian context, see: Renata von Maydell, "Anthroposophy in Russia," in *The occult in Russian and Soviet culture*, ed. Bernice Glatzer Rosenthal (Ithaca, NY: Cornell University Press, 1997), 153–167; Maria Carlson, *"No Religion Higher Than Truth": A History of the Theosophical Movement in Russia, 1875-1922* (Princeton, NJ: Princeton University Press, 1993).

[14] Richard Weikart, *Socialist Darwinism: Evolution in German Socialist Thought from Marx to Bernstein* (San Francisco, Calif.: International Scholars Publications, 1998); Nikolai Krementsov, "Marxism, Darwinism, and Genetics in Soviet Union," in *Biology and Ideology: From Descartes to Dawkins*, eds. Denis Alexander and Ron Numbers (Chicago: Chicago University Press, 2010), 215-246; Eduard I. Kolchinsky, "Darwinism and Dialectical Materialism in Soviet Russia," in *The reception of Charles Darwin in Europe*, eds. Eve-Marie Engels and Thomas F. Glick (London; New York: Continuum, 2008), 522-551.

[15] James T. Andrews, *Science for the Masses: The Bolshevik State, Public Science, and the Popular Imagination in Soviet Russia, 1917-1934* (College Station: Texas A & M University Press, 2003). Notably, Victoria Smolkin, *A Sacred Place is Never Empty* (Princeton: Princeton University Press, 2018) and Sonja Luehrmann, *Secularism Soviet Style: Teaching Atheism and Religion in a Volga Republic* (Bloomington: Indiana University Press, 2011) do not discuss Darwinism in their excellent work on Soviet atheism; this reflects, in part, the fact that cosmonauts emerged as attractive and modern faces of the reinvigorated campaign for atheism under Khrushchev. On this aspect, see: Smolkin, *A Sacred Place*.

factors, historian Nikolai Krementsov has pointed out that both sides in this debate referenced Marxist thinkers and claimed to be the true heirs of Darwin.[16]

The Darwin Museum's exhibits and publications reflect all of these developments. Inscriptions on its walls dutifully referenced Marx, Engels, Lenin, and Stalin, who had all lauded Darwin and established an unquestionable connection between Darwinism and Marxism. Darwin, Marx wrote Ferdinand Lassalle in 1881, had provided "the scientific basis for the class struggle in history."[17] The aim of promoting atheism, too, was a central focus at the Darwin Museum throughout the Soviet period, and the rise of Lysenko also left its mark.

Even so, a detailed investigation of the history of the Darwin Museum exhibits the grave difficulties experts faced while working to incorporate Darwin into Soviet ideology. A closer look at Engels' and Marx's statements about the relationship between evolutionary theory and Marx's theory of revolution raised more questions than they provided answers. A key insight and guiding theme of this dissertation is that the attempt to reconcile Darwinism with Soviet ideology ultimately required engaging the question of the place of humankind in nature and the relationship between nature and society. Ideologues, scientists, and popularizers alike puzzled how exactly the theory and laws of history on the one hand and evolution on the other related, especially since Darwin argued that evolution was a gradual process. Did the laws of nature apply to society? As evidenced by the rejection of social Darwinism, the answer was often no. Under Stalinism, the established position became that humankind was considered independent of nature, and the application of the laws of nature to society was hence rejected. This position, however, was undermined by an ongoing disagreement about whether or not the laws of history and nature had to align. In light of the vision of history as developing via revolutions, was Darwin wrong if he accentuated gradualism instead of leaps (*skachki*) in evolution?

The research conducted under the auspices of the Darwin Museum was broadly inspired by Darwin and fundamentally concerned with the place of humankind in nature. As this dissertation shows, Darwin's emphasis on the proximity of humankind to animals and thus nature continued to spark controversy. Were the differences between humans and our closest animal cousins quantitative or qualitative in nature? The argument for qualitative differences implied a leap or revolution in evolution. Nadezhda Ladygina-Kots, comparative psychologist, primatologist, and senior researcher at the Darwin

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[16] Nikolai Krementsov, *Stalinist Science* (Princeton: Princeton University Press, 1997)*;* Ethan Pollock, *Stalin and the Soviet Science Wars* (Princeton: Princeton University Press, 2006); Rossianov, Kirill O. "Stalin as Lysenko's Editor: Reshaping Political Discourse in Soviet Science," *Russian History* vol. 21, no. 1 (1994): 49-63; For a focus on Lysenko's science, see Nils Roll-Hansen, *The Lysenko Effect: The Politics of Science* (Amherst: Humanity Books/Prometheus, 2005). On the revival of genetics, see Eduard Kolchinskii and Sergei Shalimov, "'Ottepel'' i genetika: iz istorii publikatsii pervogo otechestvennogo uchebnika po genetike," *Rossiiskaia istoriia* no. 4 (2017), 75-83; on the importance of the newly founded Siberian center of science after Stalin's death for the revival of genetics, see Paul R. Josephson, *New Atlantis Revisited: Akademgorodok, the Siberian City of Science* (Princeton: Princeton University Press, 1997).

[17] GDM f. 1 ed. 263 (OF 12430 -90), ll. 1: The other quotes the museum presented to its visitors read "Darwin struck a heavy blow to the metaphysical conception of nature" (Engels), and "Darwin was the first to put biology on an entirely scientific basis" (Lenin); finally, Stalin was quoted praising Darwin as one of the courageous revolutionary scientists, who "were capable of demolishing the old and constructing the new" (Stalin, 1938). Ibid.

Museum, sought to attain answers to this question in research conducted with monkeys, apes, wolves, birds, and her own son. Publishing her main findings under Stalinism, she insisted on differences separating as opposed to commonalities uniting humans and animals. Like Ladygina-Kots, the "hominologists," specializing on "hidden" humanlike animals, better known as the Yeti or Abominable Snowman, highlighted the distance separating humans from the animal kingdom. Unlikely protagonists of a dissertation on Darwinism though they might be, the hominologists argued that their association with the Darwin Museum from the late 1950s onwards was not coincidental. Their work, they maintained, contributed important knowledge about the descent of humankind and living missing links.

The support of researchers like Ladygina-Kots for the notion of a divide separating humans and animals has to be read within the broader cultural and political context of its time. While the descent of humankind from other animals was a welcome argument for the purposes of undermining the bible and propagating atheism, the theory challenged an important element of Soviet culture that was particularly dominant in the Stalinist years: Prometheanism, or the aim to dominate nature. It found expression in slogans such as "humankind, the ruler over nature," as one rubric in the postwar journal *Science and Religion* was titled.[18] As environmental historians have shown, this cultural proclivity inspired ecologically disruptive large-scale projects, although it was neither unique to the Soviet Union nor unchallenged.[19] Analyzing the evolution of definitions of the human and the human-animal divide underscores this latter point. Hominologists in the 1960s departed from established Soviet definitions of what it means to be human. Stressing speech instead of the ability to create and wield tools, that is, labor, Soviet hominologists deemphasized the transformative powers of humankind.

This dissertation consists of four thematic chapters, arranged in chronological order, and concludes with an epilogue. The first chapter introduces the reader to the reception of Darwinism in late Imperial Russia and describes the founding of the Darwin Museum in 1907. It draws attention to the intense cooperation between scientists and artists at the

[18] *Nauka i religiia*. This rubric ran until 1964.

[19] John Bellamy Foster writes against the notion that ecological thinking was alien to Marx and Marxists. Nikolai Bukharin, he argues, was a case in point. He had written about the "equilibrium between society and nature" and defined humankind in his prison writings (*Philosophical Arabesques*) as "'both products of nature and part of it'." However, with the purge of Bukharin, what he calls the "'triumphalist' view of the human relation to nature" (Prometheanism) prevailed. John Bellamy Foster, *Marx's Ecology: Materialism and Nature* (New York: Monthly Review Press, 2000), 226ff. Bukharin quoted in Foster: Ibid., 227. For the argument that environmentalism with regards to the forests thrived in the Soviet Union, see: Stephen Brain, "Stalin's Environmentalism," *Russian Review* vol. 69 (2010), 93-118. The authors of a recent overview acknowledge the environmental impact of both capitalist and socialist modernity. However, they insist the Soviet Union was an "exaggerated modernity" that came at greater cost for the environment, which the authors blame on the lack of a civil society. Even so, they acknowledge that Soviet attitudes towards the environment evolved and eventually allowed for "public discussion" of environmental matters: Paul Josephson, Nicolai Dronin, Ruben Mnatsakanian, Aleh Cherp, Dmitry Efremenko and Vladislav Larin, *An Environmental History of Russia* (Cambridge-New York: CUP, 2013). For an inspiring approach of putting Soviet environmental history (and much more) in context by telling its story not in isolation, but together with developments in the capitalist US, see Kate Brown's *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters* (Oxford: Oxford University Press, 2012).

museum from the outset and asks why this was the case.[20] This synergy between art and science was by no means confined to Russia. Fascinating studies have analyzed the impact of Darwin's theory on art, the importance of art for the development and dissemination of Darwin's understanding of evolution, and traced his notions of aesthetics that built on his own scientific theory of evolution and sexual selection.[21] In addition, a movement among European museums grew especially from the second half of the nineteenth century, aiming to reach broader audiences through visually stimulating, well-crafted narratives essential for success in this endeavor. All these influences show how the Darwin Museum emerged as part of a broader European conversation and are important for explaining why museum founder Aleksandr F. Kots conceptualized his museum as a meeting place of art and science. Equally essential to the formation of the Darwin Museum was the influence of Rudolf Steiner's spiritualist anthroposophy.[22] Art, the museum's founder proposed, could communicate an intuitive understanding of nature – a nod to the inscrutable "natural substance" of "Goethean science" that Steiner propagated. The sympathies of the Darwin Museum's founders for spiritualist anthroposophy, an offshoot of theosophy, further reveals the narrative of a perennial antagonism between science and religion to be a gross simplification.

To explain how the Darwin Museum transitioned successfully across the revolutionary divide of 1917, it is tempting to invoke once more Komarov's series on crypsis, depicting snow grouse and their changing coats through the seasons, allowing them to blend in with the environment. The second chapter takes up the Sovietization of the Darwin Museum as an institution and investigates the broad and fundamental challenges Darwinism posed in the ideological context of Soviet Russia, providing a case study on the interplay of science and ideology. Marxist thinkers, including Karl Marx and Friedrich Engels themselves, argued that a close connection existed between the theories of Marx and Darwin: they had discovered the laws of development in history and nature respectively, as Engels put it at his friend's funeral.[23] However, Darwinism was not beyond criticism. Whether and how to resolve the tensions between evolution and revolution was a pressing and contentious issue that troubled scientists and popularizers of science, especially those working at the Darwin Museum. Rejecting social Darwinism and the application of biological laws to society, they considered humankind separate and emancipated from nature. Yet, as this chapter argues, the need to reconcile evolutionary

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[20] On aspects of the art at the Darwin Museum, see the research of Pat Simpson. See f. ex. Pat Simpson, "A Cold War curiosity?: The Soviet collection at the Darwin memorial museum, Down House, Kent," *Journal of the History of Collections*, Volume 30, Issue 3 (14 November 2018), 487–509 https://doi.org/10.1093/jhc/fhx043; Pat Simpson, "Beauty and the Beast: Imagining Human Evolution at the Moscow Darwin Museum in the 1920s," in *Picturing Evolution and Extinction: Regeneration and Degeneration in Modern Visual Culture*, ed. Fae Brauer and Serena Keshavjee (Newcastle upon Tyne: Cambridge Scholars Publishing, 2015), 157-178.

[21] Diana Donald and Jane Munroe, eds., *Endless Forms: Charles Darwin, Natural Science, and the Visual Arts*, (Florence: Conti Tipocolor S.p.A., 2009); Julia Voss, *Darwins Bilder: Ansichten der Evolutionstheorie 1837-1874* (Frankfurt/Main: Fischer Taschenbuch Verlag, 2009).

[22] On the influence of anthroposophy on a specific artwork, see Antonina Borisovna Nefedova, "Vliianie antroposofskikh idei R. Shteinera na zhivopisnyj triptikh V. A. Vatagina 'evoliutsiia mirovozzrenii'," *Iskusstvo i sovremennye khudozhestvennye praktiki* (2017), 29-36 https://cyberleninka.ru/article/v/vliyanie-antroposofskih-idey-r-shteynera-na-zhivopisnyy-triptih-v-a-vatagina-evolyutsiya-mirovozzreniy.

[23] Friedrich Engels, "Entwurf zur Grabrede für Karl Marx, " in *Karl Marx Friedrich Engels Werke* vol. 19, 9th edition (Berlin: Dietz Verlag, 1987), 333f; quote: Ibid., 333.

theory with Bolshevik revolutionary ideology undermined the conceptualization of nature and society as separate entities. Soviet Prometheanism aimed to seize the laws of nature and thereby subjugate it to the service of human needs and the laws of history. This chapter sets the stage for a focused debate on the place of humankind in nature as it was reflected and shaped by the research conducted at the Darwin Museum.

Chapter three analyzes the work of the museum's comparative psychologist and primatologist Nadezhda N. Ladygina-Kots (1889-1963), who worked at the Darwin Museum as a senior researcher and enjoyed international renown. As historians of science have noted, the Bolshevik revolutionaries in their ambition to further science broadened its social base, leading to an increase in the number of women involved in scientific research. Ladygina was at the forefront of this development. [24] Ultimately, she sought to answer the question of what defines us as humans, working with a variety of animals, including chimpanzees, and her own son. The images accompanying her most famous work depicted corresponding poses and emotions in chimpanzee Ioni and son Rudi. Published under Stalin in 1935, the photographs seemingly support Darwin's gradualist thesis that humankind differs from animals only in degree and not in kind. The research offered a comparison between a chimpanzee and a human child, her son. In contrast to the visual presentation, Ladygina underscored qualitative differences. Ultimately, her conclusions confirmed the anthropocentric biases of Stalinist culture and offered a correction to Darwinism.

The debate on the human-animal connection or divide that Darwinism reinvigorated and which Nadezhda Ladygina-Kots' research investigated experimentally preoccupied another group of researchers that became associated with the Darwin Museum towards the end of Ladygina's life: "Hominologists." Around the middle of the twentieth century, researchers focusing on "hidden" (humanlike) animals across the world were mesmerized by creatures known as Sasquatch, Bigfoot, Yeti, or the Almasty. Was it possible that close relatives of humankind, unknown to science, had survived the expansion of *homo sapiens*, living even in remote areas? Soviet hominologists met at the Moscow Darwin Museum and ventured on numerous research trips. Along the way, they would redefine what it means to be human. Importantly, they came to deemphasize and reject the consensus established under Stalinism that had centered on the role of labor. This chapter demonstrates that the story of the hominologists is more than fringe. Soviet Yeti experts ventured out on missions of discovery on their own initiative in the context of a political system in which all science was under the close state supervision. Like Nadezhda Ladygina, hominologists entertained international, showing how porous the Iron Curtain could be.[25] Important to this study's inquiry into conceptualizations of nature and the place ascribed to humankind, the proposed existence of the Yeti challenged the notion of human ability to take control over the natural world. The Yeti consistently eluded researchers who set out to catalogue nature's last remaining mysteries.

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[24] Olga Valkova, "The Conquest of Science: Women and Science in Russia, 1860–1940," *OSIRIS* vol. 23 (2008), 136-165.

[25] On the exchange of the Darwin Museum's artwork in the context of Cold War diplomacy, see Simpson, "A Cold War Curiosity?;" For a well-argued history of science that attempts to break free of the "dualistic mentality" of the Cold War and make visible, for example, mutual influences and parallel developments, see Alexei Kojevnikov "The Case of Soviet Science," *OSIRIS* vol. 23 (2008), 115-135.

As a site of research and popularization of science, the Darwin Museum then reveals the dynamic tensions created by a state ideology that purported to be the highest and fullest manifestation of scientific knowledge. As I hope to show in the pages to follow, behind the story of the museum's exhibits, with its taxidermy collections, artwork, and displays frequented by Soviet children and curious adults, there lies the dramatic story of Soviet scientists trying to reconcile a scientific theory with a political philosophy. Over the decades, and across changing regimes, the museaologists and researchers navigated the politics of Darwinism as they probed in their work basic questions about nature and humankind's place in it.

Chapter 1: The Art of Science: Founding a Museum of Evolution in Tsarist Russia

In a draft of a letter likely from the late 1950s to Charles Darwin's grandson, Sir Charles Darwin (1887-1962), Aleksandr Fedorovich Kots (1880-1964) lamented the proscribed status of evolutionary theory in Tsarist Russia. The founding and long-serving director of the Moscow Darwin Museum remembered that "Darwinism had been hardly permitted under the Tzar [sic]."[26] He was certainly right to emphasize that Darwinism had caused alarm in Imperial Russia. As a science with materialistic foundations, it undermined the argument from design and the received understanding of the place of humankind in nature. Nor was Kots the only scientist to remember the backlash evolutionary theory provoked. Kliment A. Timiriazev (1843-1920), a prominent plant physiologist who earned himself the nickname "Darwin's Russian bulldog," certainly concurred with Kots' evaluation of the situation. Shortly after the October Revolution he recalled how, in Tsarist times, he had been condemned in the newspaper for banning "God from nature" while being "on the payroll of the state." Timiriazev resented that his enemies were found among Tsarist statesmen as well as members of the Academy of Sciences, and that he eventually lost his position at the Petrov Academy of Agriculture because of the influence of his opponents. Only with the change in the "political constitution" – the February and October Revolutions of 1917 that deposed the Romanov dynasty – did the position of "serious scientists" with minds not clouded by "clerical and metaphysical views" change for the better.[27]

Although Kots' and Timiriazev's observations were not unfounded, the brush with which they painted the politics of science in Tsarist Russia was too broad. Darwin's tomes were swiftly translated into Russian despite official reservations when it came to evolutionary theory, and in spite of Imperialist censorship. Distinguished members of the intelligentsia warmly welcomed the theory, and Russian scientists contributed research to further substantiate and promote Darwinism. To be sure, the Russian reception of Darwinism – even among the majority of those who welcomed the theory – was peculiar, as the existing literature on the topic has shown. Many took issue with the importance Darwin ascribed to competitive struggle as a factor of evolution, especially among members of the same species, and they regretted the influence of Robert Malthus on Darwin. What about the importance of mutual aid, they asked, of individuals not struggling with each other, but collaborating in order to survive?[28] Last but not least, Kots' own qualification that Darwinism was "hardly permitted" – rather than entirely prohibited – was significant. After all, Kots had been allowed to teach evolutionary

[26] A draft of the letter (written in English) remains in the archive of the Darwin Museum (henceforth: GDM) GDM f. 1 op. 1 (NVF 2116/530), l. 3. The letter is undated, but much of Kots' letter exchange with Sir Darwin took place in the late 1950s, around the date of the centenary of the first publication of *The Origin* in 1959. In this specific letter, Kots contrasted Tsarist repression of Darwinism with Bolshevik support for evolutionary theory, possibly in order to please Bolshevik authorities reading the letter.

[27] K. Timiriazev, *Charl'z Darvin i ego uchenie: v dvukh chastiakh: Chast' I izdanie deviatoe* (Moscow: gosudarstvennoe izdatel'stvo, n. d.), 18f.

[28] Daniel P. Todes, *Darwin Without Malthus: The Struggle for Existence in Russian Evolutionary Thought* (New York: Oxford University Press, 1989); Alexander Vucinich, *Darwin in Russian Thought* (Berkeley: University of California Press, 1988).

theory in higher education and to establish – under Nicholas II's watchful eye – a museum of evolutionary history.

The picture Aleksandr Kots conveyed to Sir Charles Darwin of the embattled place of Darwinism in pre-revolutionary Russia echoed the standard Soviet narrative: science had been repressed in Imperial Russia. Ever since 1917 Kots went out of his way to present his lifelong museum project as an orthodox Soviet institution. He asserted that the institution he had founded furthered a materialist, atheistic worldview and conveyed to museum visitors a story of perennial conflict between science and religion, of which Darwinism constituted a central chapter.[29]

This chapter aims to illuminate the questions that received short shrift in Aleksandr Kots' sweeping and one-sided verdict on Darwinism in pre-revolutionary Russia. What was the status of Darwinism in late Imperial Russia and what was the nature of its conflict with "religion?" It begins with an overview of the history of Darwinism in late Imperial Russia and then traces the steps of Aleksandr Kots and his wife and partner, Nadezhda Ladygina-Kots, in founding what became the Moscow Darwin Museum. What was their education? What shaped their worldview and therefore their lifelong museum project? Their efforts were molded not only by Darwin's theories, but also by developments in Russia as well as the culture of turn-of-the century Europe. In contrast to the anti-religious institution as the Darwin Museum would be billed after the October Revolution, and in contradiction to the narrative of science pitted against religion and an immaculate materialistic worldview that the museum presented to its Soviet audience, I show that the founders in fact harbored a deeply spiritual worldview: they sympathized with Rudolf Steiner's anthroposophy.

The history of the museum before the Revolution thus contributes to a body of literature that has complicated the picture of a purely antagonistic relationship between science and religion. There is no doubt that the history of Darwinism is rich in sharp exchanges between defenders of Darwinism on the one hand and those of religion on the other, such as the debate between "Darwin's bulldog" Thomas Henry Huxley (1825-1895) and Bishop Samuel Wilberforce (1805-1873) in Victorian England in 1860, or the 1925 Scopes "Monkey Trial" about teaching evolutionary theory in Tennessee. Nevertheless, the worlds of science and religion continued to overlap and interact. Among the supporters of Darwinism were clergymen like Charles Kingsley, and Huxley himself rejected the proposition of purging religion from the curriculum of state schools – it was anticlericalism that motivated him, not opposition to religion as such. Writers and scientists who lost faith as a result of scientific inquiries were rare specimens. "The progress of science and scholarship," in the analysis of Dominic Erdozain, "often justified" yet seldom prompted the decline of "Christian orthodoxy."[30] Some scientists even worked to reconcile science and religion. Germany's premier Darwinist, Ernst Haeckel, is a case in point. Haeckel's religion was far from orthodox. Though the

[29] See chapter 2.

[30] Dominic Erdozain, *The Soul of Doubt: The Religious Roots of Unbelief from Luther to Marx* (New York: Oxford University Press, 2015), 173-220, quote: 219. Erdozain argues that personal experience and conscience were the much more common motivations for disagreement with religious authority, even in the case of Charles Darwin and Huxley. Of 150 "freethinkers" examined, only three lost their faith under "the influence of geology and evolution." Ibid, 175 and 194; on continued opposition to mechanistic views in science, including Rudolf Steiner, see Michael Ruse, *The Gaia Hypothesis: Science on a Pagan Planet* (Chicago: University of Chicago Press, 2013).

Catholic Church and especially the Jesuits aroused his ire, due to their hostility to "progress" and thus to Darwinism, he was inspired by Spinoza and Goethe to articulate a pantheist monism, eventually founding the *Monistenbund* (Monist Association) in 1906. Haeckel argued against the dualism of "the creator and creation," "mind and matter," and was convinced of an "inseparable bond" between "force and matter" and "God and the world." All the sciences – the natural sciences and the humanities (*Geisteswissenschaften*) – should consequently be regarded as interrelated. Haeckel's pantheistic monism offered what he contended was incompatible with traditional religion, namely a "bond between religion and science" (1892).[31] The religion of Aleksandr Kots in late Imperial Russia was no more traditional than Ernst Haeckel's. Kots shared Haeckel's holistic attitude towards science and took inspiration from his Phyletic Museum in Jena; Aleksandr Kots' Moscow museum, too, was originally intended as a temple of both science and religion.

Darwinism in Imperial Russia

When Darwin first published *The Origin of Species* in 1859, Russian society was in the midst of a debate about the country's future, sparked by the defeat in the Crimean War (1853–1856). Tsar Alexander II, who ascended to the throne in 1855, implemented important reforms such as the emancipation of the serfs, the restructuring of local government, and of the justice system. The 1863 university statute and the 1864 gymnasium statute also liberalized the realm of (higher) education. Autonomy for universities was reintroduced, which had been undone under Tsar Nicholas I (1825-1855), and science was reintegrated into the curriculum of gymnasiums. However, the attitude of the state in late Imperial Russia to education and science remained ambivalent. On the one hand, the authorities harbored a practical interest developing and promoting science as a means to explore the realm. The importance of science and education remained unquestioned even though conflicts with students and universities were a mainstay under the rule of the last three tsars. On the other hand, the government remained deeply suspicious of the critical "scientific spirit"[32] and censors worked to prevent the circulation of ideas, scientific and otherwise, which would undermine the religious faith of the subjects. In the context of a political regime that closely identified with the church and intended "ever more forcefully to regulate the opinions and beliefs of its subjects," doubt and atheism amounted to an expression of the intelligentsia's emancipation and political dissent. Recent research questions the subsequent Soviet narrative that portrayed atheism as the necessary and straightforward outcome of the influx of Western materialist science such as Darwinism. This is not to say, however, that Russian thinkers did not see a link between their support for materialism and their subversive political agenda. Dmitrii Pisarev (1840-1868), one of the most famous

[31] Robert J. Richards, "Ernst Haeckel and the Struggles over Evolution and Religion," *Annals of the History of Philosophy of Biology,* vol. 10 (2005), 89-115; Ernst Haeckel, *Der Monismus als Band zwischen Religion und Wissenschaft: Glaubensbekenntnis eines Naturforschers, vorgetragen am 9. Oktober 1892 in Altenburg beim 75jährigen Jubiläum der Naturforschenden Gesellschaft des Osterlandes* (Bonn: Verlag von Emil Strauss, 1892), quotes: 10; 12.

[32] This is the essence of A. Vucinich's take on Science in Russian culture in the Age of Emancipation and of Crisis. Vucinich*, Science*. On nihilism and populism: ibid., pp. 3-34, especially pp. 14-30.

popularizers of Darwinism, held that religion and science were incompatible; he hoped that science would undermine religious belief and with it the ideological basis of autocracy.[33]

Educated Russians first encountered Darwin's theories in reviews and articles. Thanks to their fluency in German, they would read *On the Origin of Species* in H. Bronn's German translation, which appeared in 1860, just one year after the first English edition. Bronn, taking interpretive liberties in his translation, went so far as to omit the critical sentence "Light will be thrown on the origin of man and his history." It was here that Darwin alluded to the provocative thesis that would be at the heart of *The Descent of Man* (1871), namely that humans are animals among other animals. S. A. Rachinskii worked with Bronn's German translation and the second American edition when he rendered *The Origin* into Russian (1864). Of more lasting influence than Rachinskii's was Kliment A. Timiriazev's translation (1896), which served as the basis for the later Soviet edition (1937/39). Timiriazev cooperated with Moscow zoologist M. A. Menzbir (1855-1935) and they worked with the significantly revised sixth English edition (1872). Overall, more than ten editions of Darwin's *The Origin* were published before the October Revolution, followed by seven more in the Soviet Union, with significantly higher print runs.[34] The size of print runs was a matter of significant concern. The Tsarist censors were particularly worried about cheaper and popular volumes that would give a broader and less educated audience access to theories that alarmed authorities as materialist, as undermining the Old Testament, and as generally "un-Christian." In spite of censorship, however, all of Darwin's publications were swiftly translated into Russian; the Russian version of *Variation of Animals and Plants Under Domestication* was on the press even before the volume was published in Darwin's native tongue (1868). Even *The Descent of Man and Sexual Selection* (1871) was printed in Imperial Russia, receiving much attention from the censors and intensifying opposition to Darwinism. [35]

The two authors who did more to popularize and make Darwinism accessible than all others, the radical literary critic Dmitrii I. Pisarev and the plant physiologist Kliment A. Timiriazev, harbored views critical of autocracy. Part of the appeal, especially of Pisarev's popular writing about Darwinism (1864), was his vivid prose. The literary critic knew how to enthrall his audience, for example in his sketch of the gruesome struggle for existence. "The overwhelming majority of organic beings come into the world as into a huge

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[33] Victoria Frede, *Doubt, Atheism, and the Nineteenth-Century Intelligentsia* (Madison: University of Wisconsin Press, 2011), 7-15, quote: 15. On Pisarev, see 181ff.

[34] In Soviet times, A. D. Nekrasov and S. L. Sobol' compared Timiriazev's version to the English original for their 1937/1939 edition. M. B. Konashev and A. V. Polevoi, "Izdaniia 'proiskhozhdeniia vidov' Ch. Darvina v Rossii i SSSR," in *Charles Darwin and Modern Biology: Proceedings of the International Academic Conference 'Charles Darwin and Modern Biology,'* ed. M. P. Baranov et al (Sankt-Petersburg: Nestori istoriia, 2010), 584-593. On Bronn's German edition and its reception in Russia, see Iu. V. Chaikovskii, "'Proizkhozhdenie vidov.' Zagadki perevoda," *Priroda* no. 7 (1984), 88-96. As Vucinich notes, the translation of Th. Huxley and Ch. Lyell into Russian was crucial for the quick dissemination of Darwinism in Russia: Alexander Vucinich, "Russia: Biological Sciences," in *The Comparative Reception of Darwinism,* ed. by Thomas F. Glick with a new preface (Chicago and London: The University of Chicago Press, 1988), 227–226.

[35] I. F. Kovalev, "Predsledovanie ucheniia Ch. Darvina tsarskoi tsenzuroi," *Voprosy istorii religii i ateizma: sbornik statei,* vol. 7 (Moscow: Akademiia Nauk SSSR, 1959), 410-421, passim. Kovalev provides a selection of archival materials on the censorship organs from the archives of the central historical archive in Leningrad (now Saint Petersburg).

kitchen," he made his readers shudder, "where the cooks are chopping, disemboweling, stewing and frying one another."[36] In a biting comment on pre-Darwinian naturalists, Pisarev scorned their attempts to explain the laws of development in nature by invoking religion. Scientists before Darwin evaded the question of what drove evolution by simply stating "nature gave" and thus settled "all kinds of questions from above."[37] Yet, Pisarev's reading of *The Origin* was not entirely consistent. Notably, Pisarev popularized a Lamarckist reading of Darwin, positing that "acquired qualities of the organ […] are transmitted by heredity."[38]

As a spokesperson for the 1860s intelligentsia, Pisarev simultaneously reinforced the centrality of the natural sciences to radical culture, and an irreverent approach to scientific authority itself. Turgenv captured this dynamic in his novel, *Fathers and Children* (1862) in the figure of the nihilist Bazarov, a university student of humble background who "doesn't accept even one principle on faith" and coolly explains to his aristocratic interlocutor that he has no respect for authorities. While "A decent chemist is twenty times more useful than a poet" he believes in neither "science in general" nor in scientists as such. He only trusts what he can empirically confirm. "When anyone talks sense, I agree – that's all."[39] Both materialism and irreverence towards authorities undermined the pillars of the established order, which rested on autocracy and orthodoxy.

Radicals like Pisarev took their cues from the German advocates for materialism Carl Vogt (1817-1895), Jacob Moleschott (1822-1893), and Ludwig Büchner (1824-1899). If the circumstances determined individual development, materialism provided important arguments for the equality of humankind; moreover, it undermined Christianity. Thus, materialism was an ideological weapon against the social order of conservative monarchies, as Moleschott and his colleagues understood. Yet, in the face of intensifying state repression in Russia after 1862, the "attitude of passivity" that the materialist rejection of the free will engendered raised concerns. Materialism was deterministic, according scant importance to individual will, and it was thus at odds with the perceived need for an activist stance. Pisarev himself underwent a change of heart. It was only around the turn of the twentieth century that materialism once more gained in popularity among the Russian left.[40]

Darwinism itself came under increasingly heavy criticism after the publication of *The Descent of Man*, which was translated into Russian within a year of the first English

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[36] Dmitry Pisarev, "Progress in the Animal and Vegetable Worlds," in *Selected Philosophical, Social and Political Essays* by idem. (Moscow: Foreign Languages Publishing House, 1958): 297-496, here: 329f, quote: 332 (struggle for existence) and 312.

[37] Pisarev, "Progress," quotes 376 and 380.

[38] Pisarev's Lamarckist reading of Darwin is notable in light of the longevity of Lamarckism in the Russian context, especially infamous due to Trofm D. Lysenko's theories. See chapter 3. Dmitry Pisarev, "Progress in the Animal and Vegetable Worlds," 329f, quote: 332 (struggle for existence) and 312; quote (Lamarckism) 372. Darwin himself did not decisively break with Lamarck. See also Bowler on Darwin's theory of pangenesis and heredity: Peter Bowler, *Evolution: The History of an Idea: Third Edition, Completely Revised and Expanded* (Berkeley: University of California Press, 2003), 159f; 200; 253f.

[39] "Да зачем же я стану их признавать? И чему я буду верить? Мне скажут дело, я соглашаюсь, вот и все." Ivan Turgenev, *Fathers and Sons*, trans. and ed. Michael R. Katz (New York: W. W. Norton & Company, 1996), 18; 20f.

[40] Victoria S. Frede, "Materialism and the Radical Intelligentsia: The 1860s," in *A History of Russian Philosophy, 1830–1930: Faith, Reason, and the Defense of Human Dignity*, eds. Gary A. Hamburg and Randall Poole (Cambridge: Cambridge University Press, 2010), 69-89.

edition of 1871. In Lev Tolstoy's novel (1873-1878), the fashionably liberal and libertine brother of the eponymous Anna Karenina, Stiva Oblonsky, teased that if one took pride in one's ancestry (*poroda*), then "why stop short at Prince Rurik and repudiate your oldest ancestor – the ape?"[41] Not only censors,[42] some members of the scientific community reacted against the idea of the unity of the animal kingdom as well. The embryologist Karl Ernst von Baer (1792-1876) is a case in point. He was a member of the Academy of Sciences in Petersburg and a scientist who had made significant contributions to evolutionary theory, as none other than Darwin himself highlighted.[43] Weary of atheism and materialism, von Baer opposed the thesis of the beastly origins of mankind, and argued against Darwin's causal-mechanistic explanations of evolution by natural selection. In their efforts to buttress their own case against Darwinism, Orthodox theologians translated foreign anti-Darwinists into Russian and welcomed von Baer's arguments.[44] Timiriazev argued against them in "Our [Russian] Anti-Darwinists" but his main opponents were the Slavophile N. Ia. Danilevskii (1822-1885) and the critic N. N. Strakhov (1828-1896).

A particularly heated phase of the debate between Darwinists and their opponents began with Danilevskii's nationalistic and religiously motivated two-volume attempt to debunk Darwinism in 1885, followed by Kliment Timiriazev's response in print and in lectures (1887). Danilevskii sought to demonstrate what he considered to be the contradictions and flaws of Darwinism, from natural selection to the time scale Darwinian evolution required, to claiming to be able to prove that some species possess, contrary to Darwin, traits that are not serviceable to the organism itself but exist for the "exclusive good of others." Timiriazev, in response, set out to expose Danilevskii's limited understanding of Darwinian theory, his use of dated evidence, his general inability to prove his case, and his polemical intentions.[45] Since Danilevskii died shortly before the publication, Strakhov took it upon himself to defend his position. Strakhov shared the conviction that Darwinism, as a materialist science, was Western and

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[41] "[…] Степану Аркадьевичу, любившему веселую шутку, было приятно иногда озадачить смирного человека тем, что если уже гордиться породой, то не следует останавливаться на Рюрике и отрекаться от первого родоначальника - обезьяны." Lev Tolstoi, *Anna Karenina: Vol. 1* (Moscow: tipo-litografiia T-va I. N. Kushnera, 1913), 13. Engl. translation: Leo Tolstoy, Anna Karenina, trans. Louise and Aylmer Maude (Mineloa; New York: Dover, 2004), 6; On the tension between Tolstoy's "overt rejection" of Darwinism and the way "elemental premises of Darwin's theories about the way change happens and development takes place" shaped two of his best known novels, Anna Karenina and War and Peace, see Anna A. Berman, "Darwin in the Novels: Tolstoy's Evolving Literary Response," *The Russian Review* vol. 76 (2017), 331-51; quote: 332.

[42] Such theories, ruled the censors, were unsuitable for a broad Russian readership on the grounds that Darwin's theory of the origin of humankind contradicted the Old Testament. Kovalev, "Presledovanie," 415; 419.

[43] "Von Baer, towards whom all zoologists feel so profound a respect, expressed about the year 1859 […] his conviction, chiefly grounded on the laws of geographical distribution, that forms now perfectly distinct have descended from a single parent-form." Charles Robert Darwin, *The origin of species by means of natural selection, or the preservation of favoured races in the struggle for life: 6th edition; with additions and corrections* (London: John Murray, 1872). http://darwin-online.org.uk/content/frameset?pageseq=1&itemID=F391&viewtype=text (3.3.2018).

[44] Vucinich, *Darwin*, 47-49; 92-99; for Timiriazev's defense of mechanism against Danilevskii, see K. A. Timiriazev, *Charl'z Darvin i ego uchenie* (Moscow: Izdavel'stvo akademii nauk SSSR, 1941), 214-274 https://dds.crl.edu/item/151500 (3.3.2018), 264f.

[45] K. A. Timiriazev, *Charl'z Darvin i ego uchenie* (1941), 214ff.

incompatible with the "Russian spirit."[46] Although the Academy of Sciences did not consider Danilevskii's lengthy diatribe worthy of a prize, the democratic Timiriazev remarked bitterly that, unlike him, his opponents enjoyed vital support from influential and affluent individuals. Their views aligned with the stance of the conservative government whose suspicion of the scholarly community found its expression in renewed attempts to curtail the autonomy of universities with the 1884 university statute.[47]

One of the key points of contention that attracted the attention of censors, irritated the eminent Karl Ernst von Baer, and dominated the debate on Darwinism between Timiriazev, Danilevskii, and Strakhov was Darwin's rejection of teleology in evolution.[48] Rare were the contemporaries who, like the founder of the journal *The Bell* (*Kolokol*) and author of the influential autobiography *My Past and Thoughts*, Aleksandr Herzen (1812-1870), were receptive to the implications of evolutionary theory for history. Herzen grappled with contingency in nature as in history and his own life. Even before Darwin published the *Origin* the idea troubled him that adaptive evolution implied the loss of teleology and universalism, as a recent study by Aileen Kelly argues.[49] Yet Herzen was the exception. Darwin's emphasis on contingency uprooted the certainty of a world created by God – whether or not God was or was not thought to be actively involved in creation's progression since the first day had dawned. If nature did not develop according to a plan or progress towards a *telos*, what would be the meaning of life, the purpose of this world? Depending on how the relationship between natural and human history was evaluated, the belief in progress in history was at stake as well. Russians were not alone in their distaste for this aspect of Darwinism – proponents of orthogenesis like the German Theodor Eimer (1843-1898) continued to argue that evolution is driven by an innate tendency of organisms to develop in a linear fashion. In fact, Danilevskii's attack on Darwinism synthesized to a large extent Western anti-Darwinism.[50] Timiriazev emphasized in his polemical answer to Danilevskii how [a]s a result of Darwinism natural science became – not just in theory, but also in practice – natural history. That's all," he claimed, and asked rhetorically whether "contemporary historians do not rely in their accounts on a chaos of innumerable coincidences that we call human instincts and passions"?[51] Timiriazev sought to downplay how upsetting the emphasis on contingency in evolution and history remained.

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[46] Vucinich, *Darwin*, 92-150; Vucinich, *Science*, 275ff.

[47] K. Timiriazev, *Charl'z Darvin i ego uchenie,* 18f; Vucinich, *Darwinism*, 118-150.

[48] On K. E. von Baer, see Vucinich, *Darwin*, 92-99; Uwe Hoßfeld, *Geschichte der biologischen Anthropologie in Deutschland: von den Anfängen bis in die Nachkriegszeit* (Stuttgart: Franz Steiner Verlag, 2005), 78-84, especially 83; Vucinich remarks that Danilevskii tried to discredit Darwinism on the grounds that Darwin's book, as Danilevskii saw it, violated the absoluteness of the laws built into Newtonian science. Darwin's theory was outside the realm of science, for it transgressed the ground rules of predictability." Vucinich, *Darwin*, 123ff.

[49] Aileen M. Kelly, *The Discovery of Chance: The Life and Thought of Alexander Herzen* (Cambridge: Harvard University Press, 2016).

[50] Ernst Mayr, *One Long Argument: Charles Darwin and the Genesis of Modern Evolutionary Thought* (Cambridge: Harvard University Press, 1991), 50ff; On the opposition against Darwin's embrace of chance that undermined the idea of creation by design, see: Bowler, *Evolution*, 202ff.

[51] "И откуда весь этот шум, все ети вопли отвращения? Что случилось? С дарвинизмом естествознание стало – не на словах только, а на деле – естественною историей. Вот и все. А разве современный историк в своих объяснениях не прибегает исключительно к хаосу бесчисленных случайностей, которые мы называем человеческими побуждениями и страстями, или для него еще

The reactions to Darwinism were strong because what was at stake was a worldview, as Timiriazev convincingly concluded. From harmony in nature to purpose in evolution, Darwinism undermined it;[52] proponents and opponents of Darwinism alike, not just in Russia, regarded Darwinism and the Bible's story of creation as incompatible, and in a broader sense this applied to religion and materialism. Russian opponents of Darwinism found support among members of the St. Petersburg elite. This did not go unnoticed by the passionate advocate of Darwinism, Kliment Timiriazev. As a student in the 1860s he had imbibed that generation's strong commitment to science as a key to a better social and political order, and he was among those scientists who were ready to sacrifice the comfort of their careers for their students, for university autonomy, and for science. The debate and reception of Darwinism provides important context to evaluate the opportunities and constraints of becoming a naturalist and of founding a museum dedicated to biology and evolution in Imperial Russia. How this played out in the life of the founders of the Darwin Museum, Alekandr Kots and Nadezhda Ladygina-Kots, will be taken up next.

Aleksandr Kots, Nadezhda Ladygina-Kots, and the Founding of the Darwin Museum

Like Aleksandr Herzen, whose intellectual trajectory and studies in science led him to embrace the emphasis Darwin placed on contingency in evolution, Aleksandr Fedorovich Kots was keenly aware of the role of chance in history, including his own biography. Reminiscing late in his life, he listed all the chance encounters that led him to found the Darwin Museum, beginning with the meeting of his parents and including his very own marriage in 1911 to Nadezhda Nikolaevna Ladygina (1889-1963).[53] The biographies of Aleksandr Kots and Nadezhda Ladygina, who established her own research laboratory at the Darwin Museum and became a prominent comparative psychologist (see chapter 3), are intricately connected with the history of the museum. What the surviving autobiographical writings do not reflect upon is the religious upbringing of the two young people. Before we turn to the question of how Kots' and Ladygina's spiritual worldview shaped how they conceptualized the museum, the focus here will be on their formation as naturalists in late Imperial Russia. They embarked upon their careers at a time in which the students and academic community on the one hand and the Tsarist state on the other clashed repeatedly, in which science and science education were highly politicized; it was also a time in which fledgling naturalists profited from important possibilities, unprecedented in the case of women, whose struggle for access to higher education was finally bearing fruits, and that included, especially in the larger cities, a flourishing associational life.

Aleksandr Fedorovich was the second child of a German immigrant and schoolteacher (gymnasium), Alfred Kohts (Fedor Kots). His mother, Evgeniia, must have been well educated, for she had once been a governess in the household of the poet Nekrasov's brother. The family that socially belonged to the "people of various ranks"

обязательны идеи Боссюэта? И чем исторический процесс отличается от процесса биологического?": Timiriazev, *Charl'z Darvin* (1941), quote: 266.

[52] Vucinich, *Science*, 279; see Timiriazev's rebuttal of Danilevskii and his foreword to the sixth edition: *Charl'z Darvin* (1941), 214ff; Timiriazev, *Charl'z Darvin* (n.d.), 13-16.

[53] GDM f. 1 ed. 233 (OF-10141/564), l. 70f.

(*raznochintsy*) did not fit into Imperial Russia's rigid system of estates and experienced economic hardship as the result of Alfred's early death. His mother could only afford a high school (gymnasium) education for the oldest son, so Aleksandr was initially sent to the German Lutheran Peter and Paul School in Moscow where his education was free of charge. Only after the elder brother's untimely death was Aleksandr able to transfer to a gymnasium, one of the key contingencies Kots identified in his life because only graduates of classical gymnasia qualified to enroll at university.[54]

Kots bemoaned the "complete absence at the gymnasium of any instruction" on nature.[55] The question of whether or not children should be taught natural sciences in school was debated throughout the nineteenth century. As minister of education from 1866 to 1880, the arch conservative D. A. Tolstoi rolled back the liberal educational reforms enacted in Alexander II's early reign. Tolstoi had an open ear for N. N. Strakhov and the conservative writer and historian M. P. Pogodin (1800-1875). They informed him of their concerns about Darwinism, which, they argued, was fundamentally linked to both atheism and materialism and therefore constituted a threat to the established political order. In 1871, Tolstoi banned biology from the classrooms of the classical gymnasia. The curriculum he introduced emphasized classical languages, mathematics, Russian and Church Slavonic.[56] The Free Economic Society's comprehensive survey of primary school education, conducted in 1895-1896, shortly after Kots attended primary school, confirmed that children in their first years at school learned about "religion, Russian language and arithmetic," and some teachers also covered geography and history.[57] Kots thus grew up in an era of uneasy relations between state policy and science, a dynamic that impacted his education.

Neither Aleksandr Kots nor Nadezhda Ladygina reflected in their surviving autobiographical writings on the role religion played in their upbringing. Ladygina focused on her social background and – unlike her husband – her education in science. Nine years younger than her husband, Nadezhda Nikolaevna recalled with fondness her science teacher in the gymnasium she attended in the provincial town of Penza, some 388 miles (625 kilometers) southeast of Moscow, where she grew up as the daughter of a former serf, a music teacher who had bought his freedom before serfdom was abolished in 1861.[58] Her science teacher took the students out on excursions into nature, evidently applying Dmitrii Kaigorodov's excursion method. In 1900, Kaigorodov from the Forest Institute in Saint Petersburg had recommended a pedagogical approach that could be described as ecological education to the ministerial commission that worked on reforming science lessons in secondary schools. What he proposed was that children should study nature as a living community of creatures cooperating with one another, echoing the anti-Malthusian bent that characterized the Russian view of nature and

[54] GDM f. 1 ed. 233 (OF-10141/564), ll. 8-13.
[55] GDM f. 1 op. 1 ed. 269 (OF-10141/50), l. 5. His dedicated Latin teacher, A. N. Milotvorskaia, enabled Kots to transition from the «real school» of the Peter and Paul School to the gymnasium. It was she who taught him about Kliment Timiriazev, which made an impression on the boy. GDM f. 1 ed. 233 (OF-10141/564), l. 12.
[56] Vucinich, *Darwin*, 102-104; Vucinich, *Science*, 275ff.
[57] Christine Ruane Hinshaw, "A source for the social history of late Imperial Russia: The 1895 primary school survey conducted by the Free Economic Society," *Cahiers du Monde Russe* vol. 25 no. 4 (1984), 455-461.
[58] GDM f. 11 op. 1 ed. KPOF 11137/257, ll. 50f.; GDM f. 11. Op. 1 ed. 15111/1982, l. 1.

evolution, as Jane Costlow has observed. Rather than teaching zoology and botany as separate disciplines, Kaigorodov envisioned students who learned how to explore the flora and fauna of the meadow and the forest.[59]

School was certainly not the only place to learn about nature and become acquainted with science. In lieu of a thorough education at the gymnasium, personal connections and extracurricular opportunities played an important role in the scientific education of the young Aleksandr Kots.[60] Crossing social lines, he lingered at the markets that Muscovite elites abhorred as chaotic places of backwardness in the very heart of the city. At the market of *Okhotnyi riad* (Hunter's Row) and *Trubnaia ploshchad* (Pipe Square),[61] Sasha would marvel at the animals for sale and spend his time in search of game whose skins he could mount, a craft he learned from members of a small workshop.[62] Aleksandr Fedorovich also made the acquaintance of the accomplished taxidermist and amateur scientist Fedor Lorents (Theodor Lorenz), whom he credited for instilling in him an aesthetic relationship to nature and for fueling his passion for the animal world. Aleksandr Fedorovich recalled "the eternally young Lorents" fondly, remembering how "in the small museum-workshop, in conversations, […Lorents...] strengthened and formed the interests of future zoologists […]."[63] These were the beginnings of Kots' ever growing private collection of stuffed animals that would eventually form the basis of the Darwin Museum.

As a nature enthusiast, Kots was lucky to live in turn-of-the-century Moscow, a fast-growing metropolis that was home to an active community of scientists, amateur naturalists, and voluntary associations. Associations proliferated in late Imperial Russia, including societies dedicated to science and its popularization. These societies have sparked the enthusiasm of historians who interpreted their blossoming as evidence of a nascent civil society in late Imperial Russia.[64] While the *Moscow Society of Naturalists*

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[59] On Kaigorodov's recommendation for teaching science at secondary schools to the ministerial commission, see: Jane T. Costlow, *Heart Pine Russia: Walking and Writing the Nineteenth-Century Forest* (Ithaca and London: *Cornell University Press*, 2013), 202f.

[60] Kots according to his own account fell in love with nature in his earliest childhood days. GDM f. 1 op. 1 ed. 813, l. 1.

[61] Joseph Bradley, "The Writer and the City in Late Imperial Russia," *The Slavonic and East European Review*, Vol. 64, No. 3 (1986), pp. 321-338, p. 321; *Russland: Handbuch für Reisende: Mit 9 Karten und 15 Plänen: Zweite Auflage*, ed. K. Baedeker (Leipzig: Karl Baedecker, 1888). Last accessed April 6 2016 via Hathitrust http://babel.hathitrust.org/cgi/pt?id=hvd.hn3epc;view=1up. On Moscow, see 261-308, especially pp. 268f. According to Joseph Bradley *Muzhik and Muscovite: Urbanization in Late Imperial Russia* (Berkeley: University of California Press, 1985), 62 and 69 „The sobriquet 'the big village' was implanted by the Petersburg elite at the end of the eighteenth century [...]." "By the turn of the twentieth century […] the 'civic' Moscow of museums, hospitals, and schools became more prominent." On the city's economy, including the markets, see ibid., 70–99.

[62] The anecdote of Kots mingling with workers ("*rabochi[e]-preparator[y]")* is an apparent attempt to please his Soviet readers. GDM f. 1 op. 1 ed. 813, l. 7; l. 9.

[63] GDM f. 1 op. 1 (OF-10141/50) l. 5. "[…] в небольшом музее-мастерской, в беседах с вечно-юным […] Лоренцем росли и крепли и формировались интересы будущих зоологов и до чего же привлекательны были когда то эти 'Лоренцовские беседы'.» Honoring his teacher, Kots posthumously published Lorents' scientific writings: Theodor Lorenz, *Die Birkhühner Russlands: deren Bastarde, Ausartungen und Varietäten: Fragmente einer künstlerisch-wissenschaftlichen Monographie* (Moscow 1910/1911)

[64] On associations and the emergence of a civil society in late Imperial Russia, see Joseph Bradley, *Voluntary Associations in Tsarist Russia: Science, Patriotism, and Civil Society* (Cambridge, Mass: Harvard University Press, 2009); for a critical take on the literature on an emerging civil society in late

(1805) was exclusive, others, like the *Moscow Society of Amateurs of Natural Science, Anthropology, and Ethnography* at Moscow University (1863), were more popular in outlook. Instead of conducting their meetings in French or German, the *Amateurs* opted to publish their findings in Russian, sponsoring fieldwork, lectures, and exhibitions. Moscow's Polytechnical Museum, which became an important site for lectures, such as Timiriazev's on Darwinism, emerged from the society's polytechnical exhibition (1872), one of three successful exhibitions its members mounted in the nineteenth century.[65]

Aleksandr Fedorovich's ambitions were first encouraged at the zoo, where the youth enjoyed the opportunity to engage with the city's scientific community. The Moscow zoo was associated with the *Society for the Acclimatization of Animals and Plants* until the Bolsheviks nationalized it in 1919, when Kots himself would temporarily act as the zoo's director. Already as a teenager Kots offered his mounted animals at the zoo's exhibition and won, at the age of sixteen, the *Society for Acclimatization's* silver medal; he also received support for his first scientific foray to Siberia in 1899.[66] The renowned zoologist M. A. Menzbir, Kots' future advisor at Moscow University, was pleased with the "ornithological diary" that the young man composed during his expedition. In the diary, Kots recorded the birds he encountered and collected while in Siberia, and Menzbir agreed to publish the account in the bulletin of the prestigious *Moscow Society of Naturalists*.[67]

In the revolutionary year of 1905, a year away from graduating from university, Aleksandr Kots greeted the opportunity to travel west in the capacity of tutor and fiend of Nikolai Bobrinskii. While there, he established ties with the international world of science and deepened his education. Nikolai was an offspring of the illustrious Bobrinskii family that traced its roots back to the (illegitimate) son of Catherine II and count

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Imperial Russia, see Laura Engelstein, *Slavophile Empire: Imperial Russia's Illiberal Path* (Ithaca, NY: Cornell University Press, 2009).

[65] Societies and private endowments became relevant players in the sciences as government funds proved insufficient and the conflicts surrounding universities led as far as the temporary closure of Moscow University in 1911. Alexander Vucinich, *Science in Russian Culture 1861–1917* (Stanford: Stanford University Press, 1970), 77f; 204ff. On associations and the emergence of a civil society in late Imperial Russia, see Bradley, *Voluntary Associations.* While Moscow, and of course Saint Petersburg, were important centers of science and education, efforts to disseminate science reached beyond the metropolises. Some societies, like the Russian Geographical Society, entertained chapters in the regions and cooperated at times with local populations. Bradley, *Voluntary Associations*, 86-127, especially 99ff. Very active in popularizing science was the Saint Petersburg Society of Naturalists. Its members successfully solicited for example the cooperation of "*zemstvo* authorities, local schools, and provincial government officials appealing for more popular participation in the study of Russian flora […]" Vucinich, *Science*, 207f. Berdinskikh emphasizes the role of statistical committees on the regional level (gubstatkom) as centers of regional scientific activities. The committees were introduced in 1935 with the purpose of generating knowledge of the realm for government purposes and intensified their activities in the reform era. See: Viktor Berdinskikh, *Uezdnye istoriki. Russkaia provintsial'naia istoriografiia* (Moscow: NLO, 2003).

[66] Kots served as director of the Moscow zoo from 1919-1924. For Kots' account of the history of the Moscow zoo and the many financial problems the institution faced, see GDM f. 1 op. 1 ed. 672 (OF 10141-109). Quote: Ibid., l. 4; GDM f. 1 op. 1 ed. 291 (10141/546), l. 1. On A. P. Bogdanov, see G. Iu. Liubarskii, *Istoriia zoologicheskogo muzeia MGU: Idei, liudi, struktury* (Moskva: Tovarishchestvo nauchnykh izdanii KMK, 2009), 32ff.

[67] The "Zametki ob ornitologicheskoi faune iugo-zapadnoi Sibiri (Barabinskoi oblasti i severo-vostochnoi chasti Aklmolinskoi oblasti)" were published in 1910, several years after Kots had penned them. GDM f. 1 op. 1 ed. khr. 738 (NVF-2116/415), l. 1. http://new.search.rsl.ru/en/record/01007904219 (last accessed October 1 2016); Kots on the influence of Menzbir on his education: GDM F. 1 op. 2 OF- 15845/515.

Grigorii Orlov. Aleksandr Fedorovich tutored Nikolai in the natural sciences – apparently with some success since the boy would later become a zoologist in his own right. The journey presented Kots with the chance to meet the German popularizer of Darwinism, Ernst Haeckel (Jena), as well as the geneticists August Weismann (Freiburg), and one of the re-discoverers of Mendel's law of inheritance in 1900, Hugo de Vries (Amsterdam). De Vries personally received the young Russian and took him out to marvel at the "sea of golden yellow, dazzling" evening primroses – the very flowers that De Vries used as empirical evidence to support his theory of mutation, which initially seemed to pose a serious challenge to Darwin's gradualist theory of evolution.[68] Instead of pursuing revolutionary activities in 1905, therefore, Kots journeyed through Western Europe and met the contemporary luminaries of biology.

Both in 1905, and in 1913 – with his wife Ladygina –, Aleksandr Kots also used his journeys to Western Europe to walk through the halls of the temples of science, – the museums in Kensington, Paris, Hamburg, Stuttgart, and Jena, among others. Importantly, Kots' travels and visits to Western museums gave him firsthand knowledge of the nineteenth-century museum reform movement. Prominent voices of that movement, like the British Museum's John Edward Gray in 1864, linked the task of the museum to that of social reform, arguing that educating the working class should be a central mission of the museum.[69] Consequently, museums had to find ways to address publics with diverse social backgrounds and varying levels of knowledge. Gray supported in 1864 what Charles Darwin and Thomas Henry Huxley had advocated in a debate over the London Museum for Natural History in 1858, where they supported partitioning the museum into two sections. One section would be dedicated to displays and exhibits, the other to research and storage. The general public should have access only to the former section where it would be offered a careful selection from the museum's collection that would represent knowledge in an easily accessible way, while items in the storage unit should be reserved for specialists. By the turn of the twentieth century, important German museums of natural history, staged exhibitions that aimed to introduce visitors to new developments in biology and presented to them artifacts exemplifying the ideas of zoogeography, natural and artificial selection, and ecology. In Altona, Germany, a

[68] GDM F. 1 op. 1 ed. 848 (OF-10141/587); quote: l. 13. Geneticists argued that mutations drove evolution. The theory of evolution many endorsed was one of saltation, not gradualism, which came under attack not only in biology but also in geology. Many initially rejected adaptation to an external environment and natural selection as central to evolution. An exception was Hugo De Vries, who maintained that natural selection should still be taken into account to explain which mutations endured. That genetics and Darwinism were not mutually exclusive became established only with the "Evolutionary Synthesis." The synthesis was formulated in seminal works published by the Russian émigré to America Theodosius Dobzhansky and others in the 1930s and later. Back in 1905, when Aleksandr Kots encountered with Weismann and De Vries two of the founding fathers of modern genetics, the synthesis was not yet on the horizon. Bowler, *Evolution*, 260ff. and 325ff; Peter Bowler, *The Non-Darwinian Revolution: Reinterpreting a Historical* Myth (Baltimore: The Johns Hopkins University Press, 1992), 105ff; V. B. Smocovitis, "Unifying Evolutionary Synthesis and Evolutionary Biology," *Journal of the History of Biology* vol. 25. no. 1 (1992), 1-65.

[69] Anke te Heesen, *Theorien des Museums: Zur Einführung* (Hamburg: Junius Verlag, 2012), 64ff. Susanne Köstering, *Natur zum Anschauen: das Naturkundemuseum des deutschen Kaiserreichs 1871-1914* (Köln: Böhlau, 2003), especially 43ff. The reform movement gained momentum towards the end of the nineteenth century, although it did encounter opposition along the way. While some critics resisted the idea of sharing their collections, others wanted to prevent the limitation of access to the broader museum collections to researchers only. On the German case, see Köstering, *Natur zum Anschauen*, 19–74.

taxidermy scene showed a pack of (stuffed) wolves attacking a group of elks (1904).[70] Such visually impressive exhibitions, aimed at a broadening audience, were to the taste of the influential Stuttgart taxidermist, Philipp Leopold Martin (1815-1886). Martin urged his colleagues in taxidermy to create dramatic scenes from the life of animals. Thus, the New Museum Idea influenced several of the museums Aleksandr Kots visited on his journey.[71]

Aleksandr Kots and Nadezhda Ladygina crossed paths at the Higher Courses for Women soon after Kot's return to Moscow in 1905. Nadezhda Nikolaevna came to the city to continue her education after graduating from the Penza gymnasium with a gold medal in 1907. The Higher Courses were of exceptional importance for the educational landscape of Moscow and the empire as one of only few institutions that offered women a pathway to higher education. Students could choose between three departments, the historical-philosophical, physical-mathematical, and the scientific-historical; in 1906, a medical school was added. The history of the Higher Courses dated back to 1872, but the Tsarist government had forced their closure in the 1880s, fearing student radicalism. Women who sought emancipation through education, a strong (albeit not the only) emphasis of the Russian feminist movement, could for over a decade enroll only at the Bestuzhev Courses in Saint Petersburg. Moscow's Higher Courses reopened in 1900 only to students who obtained the necessary approval from the police.[72] Ladygina with her aspirations in science was lucky to graduate at a moment when career and educational opportunities once closed to women were becoming available.

As a private institution the Higher Courses for Women was remarkable also because it became a haven for professors who had lost their jobs at state institutions as conflicts between the academic community and the Tsarist government over university autonomy and student corporal rights became especially intense at the turn of the century. The geneticist Nikolai Kol'tsov was a case in point. He was expelled from Moscow University for his participation in the circle of young revolutionary scholars in 1905, run by the Bolshevik astronomer P. K. Shternberg. To make matters worse, he had also published a brochure *In Memory of the Fallen* (1906) to commemorate the students who

[70] The most important German natural history museums accomplished the turn away from strictly taxonomic displays towards a Darwin-inspired illustration of zoogeography, natural and artificial selection, and ecology by the turn of the twentieth century. Köstering, *Natur zum Anschauen*, 75–222; on Martin: 154ff.

[71] Te Heesen, *Theorien*, pp 64ff; It was thus museums of natural history that pioneered the separation of the two functions of the museum. Köstering, *Natur zum Anschauen*, 19–74. On the Hamburg museum, see: Ibid., 58f.

[72] TsIAM f. 363 op. 1 d. 55, ll. 1, 1ob; TsIAM f. 363 op. 1 d. 27, f.ex. ll. 8f. The debates about the state of society and its future that were originally elicited in the face of the defeat in the Crimean War and in the context of the upcoming emancipation of the serfs also sparked discussion about the liberation of women. Education became a main focus of this debate, along with the sexual question and women's economic situation and, after the turn of the century, the vote. However, the women's liberation movement that emerged in Imperial Russia was heterogeneous. The movement's protagonists had their specific priorities and some went so far as to subsume the particular liberation of women to a general liberation, the revolution. Richard Stites, *The Women's Liberation Movement in Russia: Feminism, Nihilism, and Bolshevism, 1860-1930* (Princeton: Princeton University Press, 1990). On education, see especially 50ff; 167ff.

lost their lives in the 1905 Revolution as victims of autocracy.[73] The Moscow Higher Courses for Women offered him new employment, as well as some of the professors whom L. Kasso, the Minister for Education, dismissed in 1911 as a result of their display of solidarity with student demonstrators and their support for university autonomy.[74]

Aleksandr Fedorovich joined the faculty of the Higher Courses for Women in 1907/1908 and soon founded a biology museum focusing on evolution. As a recent graduate from Moscow University, he was hired to teach comparative anatomy and evolutionary theory.[75] Together with Kots came his rich collection of stuffed animals, skeletons of anthropoids, and other exhibits, upon which he drew to bring his lectures to life.[76] Up to that point, he had acquired the pieces on his own initiative and paid for them out of his own pocket. In 1913 he donated his collection to the Higher Courses for Women, thereby creating an educational museum. The women studying at the Higher Courses in Moscow were the primary visitors of the Biological Museum (*biologicheskii muzei moskovskikh vysshikh zhenskikh kursakh*), also referred to as Museum of Evolutionary History. The museum was located in the auditorium building of the Higher Courses on Malaya Tsaritsynskaia Street (since 1924 Malaya Pirogovskaia). Kots, in addition to keeping up with his teaching duties, was busy administering it and enlarging the collection with materials he ordered from as far away as Germany, England, and France.[77] From the very beginning, conditions were cramped, which made (the safe) storage of the growing collection difficult. Such circumstances were also suboptimal for working with the students.[78] Kots pleaded as early as 1914 that the newly founded museum needed more appropriate premises in order to accomplish its "cultural mission […] among the mass of educated society."[79]

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[73] I. A. Rapoport, "Kol'tsov, kakim ia ego pomniu," in *Iosif Abramovich Rapoport – uchenyi, voin, grazhdanin: Ocherki vspominaniia materialy,* otv. red. V. G. Mitrofanov (Moscow: Nauka, 2001), 14–21, on this episode: p. 20.

[74] Vucinich, *Science*, 42-65 on university reform and the onset of conservatism and ibid., 183–213 on university politics in the era of reaction. On 1911, see: ibid., 195.

[75] GDM f. 11 op. 1 ed. KP OF 11137/257 l. 54. According to Kots, it was the students who took the initiative and demanded instruction in evolutionary theory. Kots, *Sobr. soch.: t. 2*, pp. 60ff, especially 64f.

[76] Kots, *Sobr. soch.: t. 2*, pp. 60ff, especially 64f. In the Moscow tradition of teaching natural sciences, the approach of using taxidermy exhibits in his lectures was closely associated with A. P. Bogdanov, whereas S. A. Usov resorted to drawings. This was the result of the situation that arose from the agreement the two students of Rul'e reached to split the realm they had inherited from their teacher and to not interfere in the other's domain. Usov thus had no access to the exhibits of the university's zoological museum. See: Liubarskii, *Istoriia*, pp. 38f.

[77] GDM F. 1 op. 1 ed. khr. 218 (OF-12430-52), l. 1; TsIAM f. 363. op 2. dd. 1-5 contains a wealth of receipts from some of the most distinguished dealerships in educational and ethnographic materials as well as natural history specimens, such as Johannes F. G. Umlauff in Hamburg. F. ex. TsIAM f. 363 op. 2 d. 1 l. 61.

[78] Kots, *Sobr. soch.: t. 2*, p. 94; In his review about the museum's activities in the academic year 1913/14, Kots reports that he also led excursions of visitors (in total ca. 600) not connected to the Higher Courses, some from other institutions of higher education. see: Kots, *O muzei evoliutsionnoi istorii*, p. 12.

[79] "в широкой массе образованнаго общества". Kots, *O muzei evoliutsionnoi istorii*, 15f. Kots unsuccessfully sought to win N. Shakhov as a sponsor for a museum building. Shakhov had just (1913) sponsored a significant sum to the Higher Courses for Women to finance the construction of a building for forensic medicine for prof. P. Minakov, who was among the professors who had been expelled from Moscow University by Kasso. Aleksandr Fedorovich Kots, *Sobranie sochinenii: t. 2 Istoriia sozdaniia Gosudarstvennogo Darvinovskogo Muzeia* (Moscow: GDM, 2014), 95ff.

By the last decade of Imperial Russia, between 1907 and 1913,[80] Aleksandr Kots had established the foundation of what would soon be known as the Darwin Museum. As he himself noted, his journey from the creator of a "furbarium,"[81] to being an instructor at the Higher Courses for Women, where he met Nadezhda Ladygina, co-founder of the museum and aspiring scientist, was shaped by contingencies. Beyond these contingencies, however, the fast-growing metropolis Moscow and its flowering associational life, informed by the desire to popularize science, offered Kots and Ladygina-Kots remarkable opportunities. Russian scientists were readily available, including Kots' future academic advisor M. A. Menzbir, and they leant early support to his passion and aspirations as a fledgling naturalist. Yet Kots' first journey to Western Europe, no less a chance opportunity, was equally important to the formation of the Darwin Museum. Traveling west allowed the young man to meet the leading biologists of his day, including the geneticists Weismann and de Vries, and to witness the effects of the New Museum movement, which strove to present an accessible narrative and aimed for visually stunning exhibitions in order to enthrall a broadening audience. In terms of the conceptualization of the museum, however, I argue that Kot's and Ladygina's spiritual worldview shaped their museography at least as much as the New Museum Idea.

Art and Science

In 1913, Aleksandr Kots, proud director of a fledgling museum, published a lengthy pamphlet of some 100 pages that evaluated the museums he had encountered on his recent journeys to Western Europe. This pamphlet caught the eye of Kliment Arkad'evich Timiriazev, a towering figure in Russian plant physiology and Darwin's "Russian bulldog," who saw in it ample proof that Kots' Darwinism was not as straightforward as he made it seem after the October Revolution of 1917. Kots' museum project was informed by a spiritualist worldview that stood in tension with materialism. The religious tendencies of which Timiriazev suspected Aleksandr Kots was anthroposophy, as I will show in the remainder of this chapter.

Writing in 1919, Timiriazev singled out Kots as an exemplary turncoat. The 1913 pamphlet exposed, according to Timiriazev, that the younger colleague had been an anti-Darwinist who quickly adapted to the culture and ideology of the revolution and suddenly embraced Darwinian evolutionary in its entirety.[82] Not only was Kots in Timiriazev's eyes an opportunist, he also misrepresented the museums he reviewed. Kots' appraisal of the Phyletic Museum in Jena, for example, was flawed, according to Timiriazev, failing to grasp Ernst Haeckel's agenda. Kots had criticized the Phyletic Museum for its

[80] The dates Kots referenced as the founding date of the museum range from 1896 to 1913.

[81] As a little boy Kots secretly sampled fur from the coats of the ladies visiting his mother with the aim of creating a "furbarium." On Kot's earliest love for nature, see GDM f. 1 op. 1 ed. 813, especially ll. 1-8; Kots, *Sobranie sochinenii: t. 2*, 9; 14.

[82] Timiriazev dedicated roughly a page of the foreword to the seventh edition of his *Popular Exposition of Darwin's Theory* (1919) to Kots and his critique of zoological museums. Timiriazev, *Charl'z Darvin i ego uchenie: v dvukh chastiakh* (n. d.), 19f;. In evaluating Timiriazev's claims that Kots was an "anti-Darwinist" it should be kept in mind that first mention of the name "Darwin Museum" dates to 1913, a time when the institution was otherwise referred to as "Biological Museum" or "Museum of Evolutionary History "(letter of Ludwig Heck, director of the Berlin zoo). GDM F. 1 op. 1 ed. 764 (OF 12497/572) [l. 2].

"'materialism' [and] rejection of 'metaphysical knowledge'."[83] In truth, when Haeckel conceptualized his museum, he intended it not simply as a palace of science, but as an aesthetic and religious experience. He wanted the Phyletic Museum to be a temple of his pantheistic and monistic religion. "Monism," Haeckel asserted, "shows the unity in nature and therefore that only one God exists who reveals himself in all of nature."[84] In conceptualizing the Phyletic Museum, he envisioned a place where "art and science shall contribute as one toward aesthetic pleasure and religious uplift (in the highest sense)."[85] Given this background, the elaborate, stylized decorations on the ceiling of the Phyletic Museum expressed the unity of art, aesthetics, and nature, an important element of Haeckel's ambition to reconcile science and religion.[86] Timiriazev's accusation of Kots' anti-Darwinism was exaggerated, but he was correct in supposing that Haeckel's Phyletic Museum and Aleksandr Kots' *Museum of Evolutionary History* had more in common than Kots was prepared to admit.

Kots' museum, like the Jena Phyletic Museum, was not conceived as a temple of materialist science. Like Haeckel, Kots collaborated closely with painters and sculptors. He even referred to Vasilii V. Vatagin (1883—1969), perhaps the most distinguished artist in (Soviet) Russia whose work focused on animals (*animalistika*), as a co-founder of the museum. Collaboration with artists in creating his museum as a meeting place of art and science with allusions to a higher transcendent unity reflects the impact of the museum reform movement on Kots, with its emphasis on the importance of visualization in order to captivate a widening audience. In addition, however, Timiriazev was right when he claimed that Kots' wanted his museum to

> "show God in Nature, that is to say it [the museum] has to fulfill the task that the zoological museum of the hypocritical University of Oxford served one hundred years ago: to serve as teaching aids in the lectures of the famous theologian Paly."

In a footnote, Timiriazev mused on the source of Kots' design of the museum. He concluded that, even though Kots referenced Goethe, it must be "something more orthodox" [*nechto bolee ortodoksal'noe*] than Goethe's and Haeckel's monistic pantheism derived from Spinoza.[87]

Kots and Ladygina were not orthodox, but sympathized with anthroposophy, although it remains an open question when the couple became acquainted with Rudolf Steiner's thought. Anthroposophy is an offshoot of theosophy in which the Russian Elena

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[83] Timiriazev, *Charl'z Darvin i ego uchenie: v dvukh chastiakh* (n. d.), 19f.

[84] "[….] Indem der Monismus die Einheit in der gesamten Natur nachweist, zeigt er zugleich, da- nur ein Gott existiert, und daß dieser Gott in den gesamten Natur-Erscheinungen sich offenbart!" Haeckel quoted in: Martin S. Fischer, Gunnar Brehm, and Uwe Hoßfeld, *Das Phyletische Museum in Jena* (Jena: Institut für Spezielle Zoologie und Evolutionsbiologie mit Phyletischem Museum, 2008), 4.

[85] University Archive Jena [UAJ], Bestand C, No. 640, p. 45f; see also Ernst Haeckel, „Das Phyletische Museum in Jena," *Kosmos: Handweiser für Naturfreunde: Sonderdruck* vol. IV no. 12 (1907).

[86] It was not by coincidence then that the attempt to reconcile the "Goethean vision of nature, in which nature is represented in its essence, with Darwin's teaching of entirely mechanical procedures of natural forms" did not survive the German Democratic Republic, ponders the Phyletic Museum's director, Olaf Breidbach. Quoted in Martin S. Fischer et al *Das Phyletische Museum*, 27.

[87] Timiriazev, *Charl'z Darvin i ego*, 20.

Blavatskaia, co-founder of the Theosophical Society (1875), played a central role. The German section of the Theosophical Society seceded under the leadership of Rudolf Steiner over the question of the superiority of the Christian religion in 1912, which led to the founding of anthroposophy. Like theosophy, anthroposophy operated with evidence that was "impossible to verify empirically," such as the "Akashic Records," which constituted, according to Steiner, an envisioned (*schauen*) account of "world memory." Steiner saw no conflict between his continued references to the spiritual and sources not accessible to all (like the Akashic Records) and his ambition to create an exact *Geisteswissenschaft* (spiritual science, or science of the spirit) on a scientific basis. Neither a purely material nor a solely mystical way of understanding the world were universally satisfactory since neither could account for the whole. The model for Steiner was Goethe, who, as artist and scientist, combined the "scientific and the spiritual."[88]

Both Theosophy and Anthroposophy held some sway among Russian intellectuals in the late nineteenth and early twentieth centuries. Steiner's anthroposophical disciples translated his works into Russian and published journals. Circles sympathetic to his views formed in Moscow, St. Petersburg, Odessa, Kaluga, and even included a particularly short-lived one in Vladikavkaz. They were frequented by Viacheslav Ivanov as well as the symbolist writer Andrei Bely, who, like the artist Margarita Sabashnikova-Voloshina, spent time in Dornach, the center of anthroposophy with its "Goetheanum."[89] Rudolf Steiner was married to Marie von Sivers, who had been born in the Russian Empire, and some of his lectures specifically addressed a Russian audience. Invoking the question Petr Chaadaev (1794-1856) raised in the first of his *Letters on the Philosophy of History* (1829) — which Westernizers and Slavophiles debated intensely throughout the nineteenth century — Steiner asserted that the Slavs (the "Slavic folk soul") belonged neither to the religious East nor the "philosophical-scientific" West; he conceived of history as consisting of seven stages and maintained that the Slavs represented the future sixth stage that overcame such dichotomies and strove for the "spirit."[90] After the revolutions of 1917, some of Steiner's disciples returned to Russia to participate in educational and artistic projects, such as Proletkul't. However, publishing became impossible even before the introduction of overt censorship in 1921, and the Bolsheviks dissolved the Russian Anthroposophical Society in 1923, only ten years after it had been founded.[91] Spiritualist and religious groups were targeted during purges – the painter M. Potapov, for example, who briefly worked for the Darwin Museum in the 1930s until his

[88] Helmut Zander, *Anthroposophie in Deutschland* (Göttingen: Vandenhoeck & Rupprecht, 2007), 615ff (on the Akashic Records and Steiner's opposition to the methodology of Geschichts*wissenschaft*); 874 (on Steiner's ambitions to establish a *Geisteswissenschaft*); See also Maria Carlson, *"No Religion Higher Than Truth": A History of the Theosophical Movement in Russia, 1875-1922* (Princeton, NJ: Princeton University Press, 1993); Steiner on "Goethean science": Rudolf Steiner, *Grundlinien einer Erkenntnistheorie der Goetheschen Weltanschauung: Wahrheit und Wissenschaft* (Stuttgart: Verlag Freies Geistesleben, 1961).

[89] Carlson, *"No Religion*," 54ff; Anna Mintslova was particularly important in bringing Steiner's ideas to Russia. Ibid., 90ff; On the Russian Anthroposophical Society and the press *dukhovnoe znanie*, ibid., 100f.

[90] Petr Chaadaev, "Letters on the Philosophy of History: First Letter," in *Russian Intellectual History: An Anthology*, ed. Marc Raeff (New Jersey: Humanities Press, 1966), 160-173; Renata von Maydell, "Anthroposophy in Russia," in *The occult in Russian and Soviet culture*, ed. Bernice Glatzer Rosenthal (Ithaca, NY: Cornell University Press, 1997), 153–167, here: 154-156; Carlson, *"No Religion*," 101f.

[91] For a succinct introduction, see von Maydell, "Anthroposophy in Russia."

arrest, was a theosophist.[92] Given the attitude of the revolutionary leadership, direct references to Steiner in the archival materials of the Darwin Museum are scant.

Unmistakable evidence of Aleksandr Fedorovich's and Nadezhda Nikolaevna's sympathies for anthroposophy, as well as hints as to how this spiritualist worldview shaped the museum, have nevertheless survived. In order to appreciate how remarkable this is it should be kept in mind that preserving such sources during the Soviet era was potentially dangerous. First, Kots and Ladygina-Kots named their only child "Rudolf" (Rudi, born in 1925), like Rudolf Steiner. Furthermore, excerpts by Ladygina of Steiner's *At the Gates of Theosophy* (*Vor dem Thore der Theosophie*, also translated as *At the Gates of Spiritual Science*, 1906) remain in the archive of the Darwin Museum today.[93] *At the Gates* was a piece of writing that rejected a central element of Bolshevik ideology, that of materialism. This is apparent, for example, in the conceptualization of humankind Steiner put forward. As Ladygina noted, Steiner insisted that humankind consisted of more than just the physical body that is studied by science. Six more elements determine the essence (*Wesen*) of humankind that cannot be accessed through common sensual experience. One, the etheric body, enables humans, animals, and plants to grow and reproduce and is of "reddish-bluish colors […] a little darker than the flower of a peach tree;" another, the astral body is common to animals and humans as beings who experience passion and pain. What is unique to humans is the ability to name themselves ("I"/"*Ich*"). The elements *manas*, *budhi*, and *atma* are nascent in every human and, if one manages the difficult task of developing them, one can exercise control over the etheric, astral, and physical body.[94] Further evidence for Aleksandr Kots' and Nadezhda Ladygina's sympathies for anthroposophy include photographs.

One series of sculptures at the Darwin Museum featured historical personalities whom the museum founders considered central for the history of science, including Rudolf Steiner. The sculpture itself did not survive the Soviet era, but photographs of Steiner's bust did. In one picture, the artist Vasilii Vatagin, the museum director Aleksandr Kots and the institution's co-founder Nadezhda Ladygina-Kots pose together with Margarita Sabashnikova (Voloshina) (1882—1973) at the foot of the enormous sculptural portrait of anthroposophy's founder. Sabashnikova was a disciple of Steiner who helped build the Dornach Goetheanum but returned to Russia between 1917 and 1922, that is before the completion of anthroposophy's headquarters in Switzerland in 1919.

The photograph was hence taken in the period immediately after the October Revolution. Vatagin is still wearing an apron in the picture, suggesting that he has just finished working on the sculpture. Evidently, the artist had worked on the bust with the help of photographs of Steiner, which still hung on the walls of his workspace in the Darwin Museum when the photograph was taken.[95] Although limited, the evidence is

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[92] M. Potapov recounts that his theosophical friends in Odessa had been arrested prior to him and he knew it would be his turn soon. Mikhail Potapov, *Egiptianin: biografiia izvestnogo khudozhnika–egiptologa, ikonopistsa, pisatelia Potapova M. M.* (Ekaterinburg: Izdatel'stvo 'dom knigi,' 1998), 15.

[93] GDM f. 11 ed. 1333 (KP OF 15111/1333), ll. 1-12ob..

[94] GDM f. 11 ed. 1333 (KP OF 15111/1333), l. 7; Rudolf Steiner, *Vor dem Thore der Theosophie: Vierzehn Vorträge Stuttgart vom 22. August bis 4. September 1906* http://anthroposophie.byu.edu/vortraege/095.pdf (Accessed May 8 2017), 1-9, quote: 5.

[95] K. G. Mikhailov, "Bespartiinyi bol'shevik," *Khimiia i zhizn'* no. 3 (2015), 52f. Mikhailov indicates the "archive of V. Selitskii" as the source of this photograph, which can be found online at http://bdn-

sufficient to support the claim that the founders of the Darwin Museum were not just acquainted with, but sympathetic to Rudolf Steiner and anthroposophy. Yet how did anthroposophy shape the museum?

Goethe was a central figure in anthroposophic thought, and it was with reference to Goethe that Kots discussed the relationship between art and science.[96] Steiner on his part oscillated between, on the one hand, elevating science over art (1889) and, on the other hand, declaring both equally "objective" and pursuing the "same goals" (1884 and 1897).[97] Kots embraced the latter view. A year after the Second World War he gave a speech on "The animal genre in art in the Light of Darwin and Goethe" to an audience of artists in celebration of the accomplishments of the sculptor, painter, and his long-time collaborator Vasilii Vatagin, the artist who created the bust of Steiner for the museum as well as a triptych that portrayed the "Evolution of Worldviews" based on Steiner's theory of seven cultural eras.[98] In his talk, Kots argued that art and science are deeply related and complementary.[99]

To make his point that science as well as art granted access to "truth" (*istina*), Kots took his audience on a journey back in time to Schiller's home in Jena, a town near Weimar, to witness the "felicitous encounter" that broke the ice between the two giants of German classical literature, Goethe and Schiller. The Darwin Museum's director regarded the meeting as a key moment in the history of science and commissioned the painter Mikahil D. Ezuchevsky (1879–1928) to render it on canvas.[100] As Goethe fondly remembered, the two poets met at the local Society for Scientific Research [*Naturforschende Gesellschaft*] and engaged in a deep discussion on science. Schiller remarked discontentedly that the dissecting approach of modern science, which proceeded from studying the parts, failed to appeal to the "layperson." Goethe agreed wholeheartedly and, like Schiller, rejected an approach that reduced the whole to the mechanical working of its parts. In its place, he thought, understanding the whole should be the starting point of any appreciation of organisms: "I," recollected Goethe, "responded that […] an alternative to studying nature in its bits and pieces must be conceivable, one that examines

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steiner.ru/modules.php?name=Coppermine&file=thumbnails&album=68 (February 2 2018). This collection also contains a photograph of Rudolf Steiner, signed with a poem and dated Munich, July 14 1913, which Kots, claims the site, received after attending Steiner's lecture. How Selitskii obtained the photographs and what their history is remains unknown, since a response to my inquiries was never received.

[96] The center of anthroposophy in Dornach was named "Goetheanum" and Steiner contributed to the late-nineteenth-century Weimar edition of Goethe's collected works. On Steiner's influence of the edition of Goethe's scientific writings, see Karl J. Fink, *Goethe's History of Science* (Cambridge: Cambridge University Press, 1991) 151f.

[97] Zander, *Anthroposophie,* 489.

[98] Antonina Borisovna Nefedova, "Vliianie antroposofskikh idei R. Shteinera na zhivopisnyj triptikh V. A. Vatagina 'evoliutsiia mirovozzrenii'," *Iskusstvo i sovremennye khudozhestvennye praktiki* (2017), 29-36 https://cyberleninka.ru/article/v/vliyanie-antroposofskih-idey-r-shteynera-na-zhivopisnyy-triptih-v-a-vatagina-evolyutsiya-mirovozzreniy.

[99] В этом органическом сближении научной мысли и художественной формы заключалось, как известно, глубочайшее и творческое убеждение Гете в его взгляде на познание природы и произведения великого искусства, как две стороны того же целостного и единого явления. GDM f. 1 op. 1 ed. 120 (KP OF 10141/95), l. 10.

[100] GDM f. 1 op. 1 ed. 241 (KP OF 10141/530), l. 5.

nature as active [*wirkend*] and alive, moving from the whole to the parts."[101] Animated, Goethe laid out to Schiller his thoughts on the metamorphosis of the plant.[102] When he sketched "with a few characteristic strokes of the quill" the "symbolic" archetype of a plant (*Urpflanze*), his new friend observed that Goethe's approach was one that extended beyond observation [*opyt, Erfahrung*] and prioritized the "idea" or imagination.[103]

Aleksandr Kots' audience at the lecture he held in 1946 learned that Goethe the "realist" achieved a synthesis of the empirical approach on the one hand and the school of the "metaphysical idealists" on the other. In this characterization Kots, like other Soviet commentators on the poet and naturalist, deemed it important to emphasize that Goethe recognized the existence of objects independent of the cognizing subject and appraisal of the sensory organs as allowing humankind to "adequately" experience the environment.[104] In the Stalinist context in which Kots held his speech, "adequately" could only mean completely, for Stalin wrote in his piece on materialism that "contrary to idealism […] Marxist philosophical materialism holds that the world and its laws are fully knowable […]."[105]

Yet Kots in his discussion of art and science posited that the words of the scientist fail to capture the entirety of nature. This can be interpreted as a nod to the notion of an inscrutable "natural substance" (*das Unerforschliche*) that Goethe had adopted under the influence of Spinoza, and which conflicted with the "realism" of Goethe that Soviet authors emphasized, although they did acknowledge the tension.[106] Where words fail, explained Kots in his lecture, the artist is able to intuitively capture what the scholar is unable to articulate. Moreover, he suggested, intuition and imagination also play a role in science. He thus argued that understanding nature escaped those whose approach was limited to cognitive powers.[107] Perhaps Kots also had a poem from the collection "Tame Xenias" (*Zahme Xenien*) in mind when he suggested that science and art together grant a pathway to "the one and wholesome kingdom of truth. [108] This reference would further give substance to Timiriazev's criticism of the Darwin Museum as pursuing an agenda

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[101] J. W. von Goethe, "Eine glückliche Begegnung," in idem. *Zur Naturwissenschaft (= volume 11 Goethes Naturwissenschaftliche Schriften)* (Weimar: Hermann Böhlau, 1893), 13-20: "*wie eine so zerstückelte Art, die Natur zu verhandeln, den Laien, der sich gern darauf einließe, keineswegs anmuthen könne. [/] Ich [Goethe] erwiderte darauf, daß [...] es doch wohl noch eine andere Weise geben könne, die Natur nicht gesondert und vereinzelt vorzunehmen, sondern sie wirkend und lebendig, aus dem Ganzen in die Theile strebend darzustellen.*" Ibid., p. 17. On Goethe, Romantic biology with its organic conception of nature and rejection of Descartes' mechanism, see Robert J. Richards, *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe* (Chicago: University of Chicago Press, 2002), 1-14.

[102] I. I. Kanaev, *Iogann Vol'fgang Gete: Ocherki iz zhizni poeta-naturalista* (Moscow and Leningrad: Izdatel'stvo "Nauka," 1964), 99; Bowler, *Evolution*, p. 121.

[103] Goethe, "Eine glückliche Begegnung," p. 17; Robert J. Richards, *The romantic conception of life: science and philosophy in the age of Goethe* (Chicago: University of Chicago Press, 2002), p. 2.

[104] Richards, *Romantic Conceptions of Life*, p. 10; Kanaev, *Iogann*, p. 46f; p. 57; p. 160f; GDM f. 1 op. 1 ed. 120 (KP OF 10141/95), l. 10.

[105] Stalin, "Dialectical and Historical Materialism" (1938).

[106] Richards, *Romantic Conceptions of Life*, p. 10; Kanaev, *Iogann*, p. 46f; p. 57; p. 160f; GDM f. 1 op. 1 ed. 120 (KP OF 10141/95), l. 10.

[107] Steiner identified "Erfahrung" (experience) as a key category of the Goethean way of knowing the world: Steiner, *Grundlinien*, 22ff; 36:*„[Eine] im Sinne der Goetheschen Weltanschauung begründete Erkenntniswissenschaft legt das Hauptgewicht darauf, daß sie dem Prinzipe der Erfahrung durchaus treu bleibt."*

[108] "*Одно единое и целостное царство Истины."* GDM f. 1 op. 1 ed. 120 (KP OF 10141/95), ll. 9f.

that wanted to "show God in Nature." Significantly, the Goethean verse in question had also appealed to Ernst Haeckel, whose Phyletic Museum Aleksandr Kots had visited in Jena before the October Revolution. In the entrance hall of the Jena museum, Goethe's poem attuned the visitor to Haeckel's project of reconciling science and religion:

> Wer Wissenschaft und Kunst besitzt,
> hat auch Religion;
> wer jene beiden nicht besitzt,
> habe Religion.
> [He who possesses science and art,
> has religion;
> he who does not possess the two,
> had better get religion.][109]

Conclusion

The history of the Moscow State Darwin Museum reaches back into the nineteenth century through the history of its founders, who obtained their education in Tsarist times. While Nadezhda Ladygina received a solid education in the sciences in her gymnasium and the Higher Courses for Women in Moscow, her husband Aleksandr Kots, the museum's founding director and nine years her senior, emphasized in his autobiographical writings that he owed his training as a naturalist to extracurricular activities, friendships with taxidermists, and the opportunities that turn-of-the-century Moscow with its many associations offered to an enthusiast like him. The tsarist authorities viewed Darwinism with some alarm and remained ambivalent towards natural sciences; recognizing their importance for the modernizing state on the one hand, they were keenly aware, on the other, of the hopes many members of the intelligentsia attached to science as a subversive force. The two foremost popularizers of Darwinism in Russia, Dmitrii Pisarev and Kliment Timiriazev, were a case in point. After October 1917, Timiriazev enthusiastically supported the Bolsheviks.

Like other museums of natural history, the Moscow Higher Courses for Women's Biological Museum and later the Darwin Museum featured a rich collection of visual materials and material objects, ranging from taxidermy exhibits and works of sculptural anthropology to the paintings and sculptures of artists. The attention devoted to a visually appealing exhibition was not unique to this Moscow museum, whose founding director was well familiar with the museum practices of Western Europe. Like European museums under the influence of the museum reform movement that sought to engage a socially diverse audience, the (future) Darwin Museum employed attention-grabbing visuals. In addition, however, I argue that the museum was conceptualized as a meeting place of art and science because of the influence of Rudolf Steiner's anthroposophy and Goethe on the museum's founding director.

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[109] This poem still awaits a decent translator. Note that the German original – *jemand* – is gender neutral. J. W. von Goethe, "Zahme Xenien IX," in *Goethes Gedichte in zeitlicher Folge: Sonderausgabe zum 150. Todestag. 5. Auflage* (Frankfurt/Main: Insel Verlag, 1986), 1123. Goethe's poem greeted visitors to Haeckel's Phyletic Museum in the entrance hall. Fischer et al, *Das Phyletische Museum*, 3.

Anthroposophy was a spiritualist worldview that drew heavily on poet and naturalist J. W. von Goethe and inspired Aleksandr Kots to view both art and science as valid and complementary methods of inquiry. This conceptualization of the museum, like its general sympathies for anthroposophy to which the museum's design was closely linked, undermined its claims after the 1917 October Revolution of being a bastion of materialism and atheism. As the next chapter will analyze, the museum during the Soviet era engaged in the battle to enlighten the masses and to establish a materialist and atheist culture. It presented the history of science as a struggle against religious oppression, while concealing that the history of the Moscow Darwin Museum had begun as an attempt to reconcile science and religion.

Chapter 2: Evolution in Times of Revolution: The Moscow State Darwin Museum

For the founder of the Moscow Darwin Museum, the Bolshevik October Revolution came with new opportunities. "It would be sufficient to say that in the first years of the Soviet regime, when most scientists had left the then hungry and cold Moscow, in the grip of epidemics, [I] myself was entrusted with four classes [on] Darwinism including at […] Moscow University," he later recalled in a letter to Charles Darwin's grandson, Sir Charles Darwin. Kots affirmed that the Bolsheviks, who entrusted him with the task of teaching evolutionary theory even though he was not a member of the party, "greatly supported the spreading of Darwinism & thus promoted the work of the Museum."[110] During the seventy years of Soviet rule, the Darwin Museum was able to thrive as one of four biology museums in Moscow. For this reason that Kots heaped praise upon the new rulers in the Kremlin, who staged the October Revolution of 1917 and embarked on the road to building socialism and communism that ended in 1991 with communism still unattained.

Aleksandr Kots was among those educators who collaborated with the Bolshevik revolutionaries from early on. Avenues for cooperation existed for members of the pre-revolutionary educated elites due to the Bolsheviks' attitude to science and technology as key tools in modernizing the state and taking advantage of its full potential, natural as well as human. Some Old Bolsheviks – Lenin's wife Nadezhda Krupskaia included – were longstanding champions of educational efforts, and Lenin took a lively interest in the work of the Commissariat of Enlightenment under Anatolii Lunacharskii. Lenin insisted that collaboration with the pre-revolutionary elites was necessary to rebuild both the state apparatus and the economy as well as to ensure that expert knowledge was not lost but passed on to a new generation of Bolshevik specialists.[111] While educational institutions tasked with training the new elites became the objects of interventionist policies as early as the 1920s, including purges of the student body, state authorities attempted to assert control over research institutions only later. The Academy of Sciences, for example, was (in)famous for the fact that none of its full members were card-carrying Bolsheviks as late as 1928. This changed with the turn to Stalinism in the late 1920s, when not just the economy but science, too, became subject to planning and close state supervision. Party-state intervention and control was loosened temporarily during the Great Patriotic War and reinstated with the onset of the Cold War.[112]

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[110] See Aleksandr Kots' draft of a letter (written in English) to Sir Charles Darwin: GDM F. 1 op. 1 (NVF 2116/530), l. 3. The letter is undated, but much of Kots' letter exchange with Sir Darwin took place in the late 1950s, around the date of the 1959centenary of the first publication of *The Origins*. In this specific letter, Kots contrasted Tsarist repression of Darwinism with Bolshevik support for evolutionary theory, possibly in order to please Bolshevik authorities reading the letter. F. 1 op. 1 (NVF 2116/530), l. 3.

[111] James T. Andrews, *Science for the Masses: The Bolshevik State, Public Science, and the Popular Imagination in Soviet Russia, 1917-1934* (College Station: Texas A & M University Press, 2003); Sheila Fitzpatrick, *The Commissariat of Enlightenment: Soviet Organization of Education and the Arts under Lunacharsky, 1917–1921* (Cambridge: Cambridge University Press, 1970).

[112] For a detailed discussion of the relationship between scientists and the party state and its development from the October Revolution through the Cold War, based on thorough archival research, see Nikolai Krementsov, *Stalinist Science* (Princeton: Princeton University Press, 1997). Like Michael David Fox,

If the Bolshevik revolutionaries generally embraced science, this was particularly true of Darwinism. Darwinism as a staple of anti-religious propaganda in the Soviet Union was meant to undermine the religious culture of the Ancien Régime and to contribute to the creation of a new society and culture on the pillars of science and materialism. From 1923-24 onwards, no student graduated from middle school without having studied Darwinism.[113] After all, the founding fathers of Marxism had called Darwinism "a basis in natural science for the class struggle in history" and thus established a connection between Darwinism and Marxism.[114]

Yet what exactly did Engels mean when he reminded the comrades in attendance at Marx's funeral in 1883 that "just as Darwin discovered the law of development of organic nature, so Marx discovered the law of development of human history"?[115] How did Marx, Engels, and their followers integrate Darwinian evolutionary theory into their thought? How did they negotiate and understand the relationship between evolutionary and socialist theory, between nature and society? Some popular anti-Communist and anti-Darwinist writers blame Darwin for the high blood toll of Bolshevik rule. They argue that reading Darwin turned Dzhugashvilis into Stalins, that is, pious young men into morally corrupt atheists and communists.[116] Moreover, they claim that Darwinism is at the root of "a core communist idea" of "violent revolution in which the strong overthrow the weak."[117] In contrast to this anti-Darwinist literature that draws a straight line between Darwinism and the atrocities committed in the name of communism, authors like sociologist John Bellamy Foster and historian of Germany Richard Weikart provide a close reading of Marxist writing. They highlight how important but difficult to pinpoint

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Krementsov suggests that Stalinism was not so much a radical break with the era of the 1920s but built upon policies and approaches developed already during the New Economic Policy (NEP). For the Bolshevik's attempt to cultivate a new elite and the cultural "third front," see Michael David-Fox, *Revolution of the Mind: Higher Learning among the Bolsheviks, 1918–1929* (Ithaca: Cornell University Press, 1997). Michael David-Fox, "What is Cultural Revolution," *The Russian Review* vol. 58, no. 2 (Apr., 1999), 181-201. On the Academy of Sciences, see Alexander Vucinich, *Empire of Knowledge: The Academy of Sciences of the USSR, 1917-1970* (Berkeley: California University Press, 1984); Loren Graham, *The Soviet Academy of Sciences and the Communist Party, 1927- 1932* (Princeton, N.J.: Princeton University Press, 1967).

[113] Evolutionary theory was introduced into the curriculum in 1923-24 and the course was renamed "the basics of Darwinism" in 1939-40. Taken by ninth graders at the end of middle school, the course propagated Lysenko's "Michurinist" work after 1948. See: N. a. "Darvinizm v shkole," *Bol'shaia Sovetskaia entsiklopediia*: *vtoroe izdanie* vol. 13 (Moscow: Izdatel'stvo "Sovetskaia entsiklopediia," 1952), 378. Darwinism was considered a cornerstone of biological education and framed in anti-religious terms, as is apparent from this guide to school excursions in elementary and middle schools: *Tematika uchebnykh ekskursii po istorii, literature, estestvoznaniiu, geografii, fizike i geologii po kursu nachal'noi i srednei shkoly*, otv. za vypuskov Antiuganov (n. p., n. d. [from the early 1930s as it mentions the VKP(b) decision on school programs from August 5 1932]; Andrews, *Science for the Masses*.

[114] Karl Marx and Friedrich Engels, *Selected Correspondence 1846-1895: With explanatory notes* (New York: International Publishers, 1942), 125f.

[115] Friedrich Engels, "Entwurf zur Grabrede für Karl Marx," in *Karl Marx Friedrich Engels Werke* vol. 19, 9th edition (Berlin: Dietz Verlag, 1987), 333f; quote: Ibid., 333.

[116] Soviet sources enthusiastically highlight the importance of reading Darwin in the education of a true Communist as well. The importance of Darwin for the education of Stalin is f. ex. featured in the Darwin Museum's exhibition in honor of Stalin's 60th birthday: GDM f. 19 op. 1 ed. 844, l. 1; Yuri Slezkine, *The House of Government: A Saga of the Russian Revolution* (Princeton: Princeton University Press, 2017), 44.

[117] Jeremy Bergman, *The Darwin Effect: Its Influence on Nazism, Eugenics, Racism, Communism, Capitalism & Sexism* (Green Forest: Master Books, 2014), 267–299. Quotes: Ibid., 267f.

Darwin's influence on Marx was,[118] and they dwell on the tensions that existed between Darwinism and Marxist thought.[119]

Soviet authors likewise puzzled over the exact connection between Darwinism and Marxism. Plant physiologist Kliment A. Timiriazev (1843-1920), popularizer of Darwinism and early supporter of the Bolsheviks, and the historian Moisei E. Ravich-Cherkaskii (1884-1936) went beyond pointing out parallels and suggested that important links defined the relationship between Darwinian and Marxist theories. They supported this claim by emphasizing that both theories were materialist, dialectical, and rooted in science.[120] In 1938, Joseph Stalin, too, elaborated how the connection between dialectics and materialism linked Darwinism and Marxism.[121] Darwinism became so closely associated with Marxism that calling one's opponents anti-Darwinist was a serious insult meant to undermine their reputation as good Marxists. This tactic was used repeatedly by protagonists in the vicious science war within Soviet biology under Stalin, with the "Michurinist" Lamarckist Trofim D. Lysenko (1898-1976) on the one hand and the geneticists on the other. In the words of historian Nikolai Krementsov, "'Marxist-Darwinism'" was "a public cultural resource." Heavily politicized and publicized, Darwinism was debated not by specialists alone.[122]

This chapter will discuss the twin stories of the Sovietization of the Darwin Museum and the fate of Darwinism after the Bolshevik October Revolution of 1917. As the first section of this chapter on the institutional history of the museum after October 1917 will show, the founders of the Moscow Darwin Museum were well positioned to forge an alliance with the new rulers in the Kremlin. Arguing that their institution mattered and deserved support from the Soviet state required the refashioning of the Darwin Museum; its prerevolutionary origins, influenced as they were by Rudolf Steiner's spiritualist anthroposophy, were hardly in line with the Soviet emphasis on

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[118] As John Bellamy Foster highlights: "Marx did not actually specify in his letters what he meant by [claiming that Darwin's theory "provided the 'basis' in natural history" for "our view"]." Foster argues that Darwin's writing prompted Marx to ponder the relationship between humankind and nature, concluding that "'[t]echnology reveals the active relation of man to nature'." Darwin's discussion of specialized animal and plant organs as "natural technology" stimulated Marx to deliberate the role of the "'productive organs of man in society'." Marx highlighted the production and use of tools as specifically human and at the heart of the human process of evolution, an insight that Friedrich Engels further developed in his influential essay on *The Role Played by Labor in the Transition from Ape to Man.* See John Bellamy Foster, *Marx's Ecology: Materialism and Nature* (New York: Monthly Review Press, 2000), 178–225; quotes: Ibid., 200f.

[119] Richard Weikart explores in his intellectual history of German "socialist Darwinism" the tensions between Darwinism and Marxist thinkers, especially with Social Darwinism. He argues that leading socialists "continually objected to the application of the laws of natural science (including Darwinism) to social theory, since they insisted that humans are qualitatively different from animals." Socialist Darwinism "denied Darwin's claim that human evolution was fundamentally the same as animal evolution and that the development of social institutions could be understood in light of biological principles, such as natural selection." Richard Weikart, *Socialist Darwinism: Evolution in German Socialist Thought from Marx to Bernstein* (San Francisco, Calif.: International Scholars Publications, 1998), quotes: 4f.

[120] Nikolai Krementsov, "Marxism, Darwinism, and Genetics in Soviet Union," in *Biology and Ideology: From Descartes to Dawkins*, eds. Denis Alexander and Ron Numbers (Chicago: Chicago University Press, 2010), 215-246, especially 215-235.

[121] J. V. Stalin, "Dialectical and Historical Materialism" (1938) https://www.marxists.org/russkij/stalin/t14/t14_55.htm.

[122] Krementsov, "Marxism, Darwinism, and Genetics," especially 215-235.

materialism and atheism that Darwinism was meant to promote.[123] The second section of this chapter will elucidate that Darwinism, however important, was not beyond criticism. Evolutionary biologist and historian of science Ernst Mayr observed that "[n]othing is said in the theory of gradualism about the rate at which the change may occur. Darwin was aware of the fact that evolution could sometimes progress quite rapidly."[124] Nevertheless, Darwin's claim that evolution develops by accumulated small changes was provocative in the context of a civilization dedicated to bringing about socialism and communism and pursuing a radical break with the past. And in the face of the modernizing regime's Promethean, revolutionary zeal, the question of evolution and revolution, of the place of humankind in nature, of the relationship between nature and society or natural and human history gained particular urgency. Promethean attitudes found expression in concepts such as Vladimir Vernadskii's "noosphere," which credits humankind with decisively influencing and controlling the natural world with increasing success. Surveying this debate, Mark Bassin concludes "nature on the one hand, and society on the other, were identified as ontological categories of being that were absolutely separate."[125] While the rejection of social Darwinism clearly confirms this finding, I argue that attempts to reconcile evolutionary theory with Bolshevik revolutionary ideology in the context of the debate on Darwinism complicate this analysis. If the Bolsheviks had been truly confident that nature and society were "absolutely separate" ontological categories, it would not have mattered whether or not the "leaps" or revolutions occurred in the evolution of organisms. The tensions between Darwin's gradualism and Marx's theory of revolution would not have given any reason for discomfort.

The Sovietization of the Darwin Museum

Shortly after the October Revolution, popularizer of Darwinism and plant physiologist Kliment Timiriazev singled Aleksandr Kots out as a turncoat in the foreword to his book *Charles Darwin and his Theory*. If Kots' museum before the October Revolution had been designed to "show God in Nature,"[126] he quickly refashioned it into an institution dedicated to Darwinism and atheistic propaganda. Timiriazev referenced the sympathies of the museum's founders for Rudolf Steiner's spiritualist anthroposophy, an orientation that was hardly compatible with the materialist outlook the Bolshevik revolutionaries now in power sought to promote. The Darwin Museum's director and staff indeed had to adapt to the changed political circumstances, collaborate with the new rulers in the Kremlin, and enlist the support of friends old and new, to ensure the survival of the institution. If success is measured in the longevity of an institution and in the continuity of its employees, many of whom worked for the museum for decades, then the Darwin Museum navigated the challenging political landscape rather successfully.[127]

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[123] See chapter one of this dissertation.
[124] Ernst Mayr, "Darwin's Five Theories of Evolution," in *Darwinian Heritage*, ed. David Kohn (Princeton: Princeton University Press, 1985), 755-772. On gradualism: Ibid., 761-764; quote: 763.
[125] On Stalinist Prometheanism, see: Mark Bassin, *The Gumilev Mystique: Biopolitics, Eurasianism, and the Construction of Community in Modern Russia* (Ithaca: Cornell University Press, 2016), 117ff.
[126] Kliment A. Timiriazev, *Charl'z Darvin i ego uchenie: v dvukh chastiakh* (n. d.), 20.
[127] GDM f. 1 ed. 291 (OF 10141/546), l. 4.

For the Darwin Museum, the October Revolution was of immediate consequence. The institution profited from the November 1917 decree on the expropriation of private wealth and the effort to preserve cultural artifacts of the Ancien Régime. Transformed into museum objects and re-contextualized, such artifacts were meant to teach about the past.[128] Among the many collections that were expropriated was the zoological collection and library of theologian Aleksei Stepanovich Khomiakov. The Darwin Museum's founding director was a member of the commission that evaluated Khomiakov's specimens of oriental, rare, and extinct birds, among others. In their October 1918 report, Kots and the other members of the commission recommended handing the items over to the Scientific Department of the People's Commissariat of Enlightenment. Among the treasures that had once belonged to Khomiakov, which ended up ultimately enhancing the Darwin Museum's own collection, was a copy of Audubon's valuable *Birds of America*.[129] The Darwin Museum itself evaded the possible redistribution of its collection. By the time of the October Revolution, it was, after all, no longer a private institution but a university museum affiliated with the Higher Courses for Women.

After the October Revolution, the Darwin Museum as an institution quickly came under state control. The Moscow Higher Courses for Women were transformed into the co-educational II Moscow University as early as 1918, and in 1923 the Darwin Museum became the State Darwin Museum, or *Gosudarstvennyi Darvinovskii Muzei* (GDM).[130] Like numerous other scientific associations, the State Darwin Museum came under the control of the People's Commissariat for Enlightenment's Central Administration for Scientific, Scholarly-Artistic, and Museum Institutions (Glavnauka).[131] As five-year plans were introduced in the Soviet Union, the Darwin Museum, too, drew up such a plan in 1929, addressed to the museum department of the Central Administration (Glavnauka). The plan detailed the intended purpose of the money it now received from the state and the amounts required.[132] The museum remained under the umbrella of the Commissariat for Enlightenment, which was transformed into the Ministry of Culture in 1946, until the late 1950s, when it was transferred to the Moscow City Council (Mossovet). Aleksandr Kots vociferously protested this transferal to Mossovet. The museum did not, in his

[128] In spite of the revolutionary enthusiasm that characterized War Communism (1918-1922), preservationists, seeking to prevent the destruction of Russian antiquities, successfully cooperated with the Bolsheviks. As a result, more than 200 new museums were founded, many of them former churches or estates. See: Emily D. Johnson, *How St. Petersburg Learned to Study Itself: The Russian Idea of Kraevedenie* (University Park: Pennsylvania State University Press, 2006); Roland Cvetkovski, "Object Ideology: The Formation of Museology in Early Soviet Russia," in *Transforming Knowledge Orders: Museums, Collections and Exhibitions* (Paderborn: Wilhelm Fink, 2014), 198-228, here: 199.

[129] See the (enthusiastic) protocols of the commission, consisting, among others, of A. Kots and M. A. Menzbir, to evaluate the collection of A. S. Khomiakov. GARF F. A-2306 op. 28 d. 156, l. 6. Kots was appointed the curator head of the zoological collection and library of the former Khomiakov Museum. FDM f. 1 op. 1 ed. 840 (KP OF-12597/531), l. 1. The Darwin Museum acknowledges that it received valuable items from Khomiakov's collection, such as Audubon's *Birds of America.* http://www.darwinmuseum.ru/projects/exhibition/ptitcy-na-knizhnykh-stranitcakh (retrieved June 5 2015).

[130] TsIAM f. 363 op. 1 d 170.

[131] 1923 is the date stated in GDM f. 1 op. 1 ed. OF 10141/564, l. 1. For the Darwin Museum's "passport" with Narkompros, see: GDM f. 1 op. 2 KP OF-15845/719, l. 1.

[132] For the 1929-1933 period, GDM f. 1 op. 2 (KP OF 15845/737), ll. 1-4.

opinion, receive sufficient (financial) attention from the Moscow City Council, and he perceived the whole affair as a downgrading of the Darwin Museum.[133]

Aleksandr Kots understood early on that the survival of institutions like the Darwin Museum, dependent on state funding and undergoing increased ideological scrutiny, depended on catering to the Bolsheviks. By conceptualizing the Darwin Museum as a museum for the masses, Kots heeded the demands that Commissar of Enlightenment Lunacharskii conveyed at the First Museum Conference in Petrograd in 1919.[134] Before 1917, when it was still a university museum, the number of visitors was limited, although not just to the students of the Higher Courses. Kots hoped to introduce "the mass of educated society" to his collection.[135] He proudly announced that his museum attracted in 1913 some 2000 visitors during the holidays alone.[136] After the revolution, however, the number and social profile of the visitors changed. In the 1920s, the People's Commissariat for Enlightenment and *politprosvet*, an organ dedicated to "political enlightenment," sent visitors to the museum.[137] The numbers increased from 1600 annually in 1921 to 41,738 by 1928-29.[138] School children constituted a prominent portion of visitors, with 261 groups or almost 8000 ninth graders visiting the museum from September 1935 through May 1936, for example. Kots conceived of the museum as a place where children's education was evaluated (*kontrol'nyi punkt*) and he used their visits to draw up a report on the children's knowledge of Darwinism and biology. He found their knowledge wanting: the children routinely claimed that penguins lived on the North Pole, he noted. Kots concluded that such ignorance indicated that teachers lacked adequate training.[139] In the 1930s, the museum furthermore highlighted the political importance of cooperation with workers, among them students at workers' universities (*rabfak*) and, especially, employees of the fur company *kholodil'nik*. In a "joining of ranks" (*smychka*) of scientific institution and factory, the museum's staff read lectures and staged exhibitions for the *kholodil'nik*

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[133] The GDM's transferal to the Moscow City Council, Mossovet, in the late 1950s coincided with the decision to give the new building originally intended for the museum to the Bol'shoi theater, GDM F. 1 op. 2 KP OF 15845/1215 ll. 1f. A disappointed Kots lobbied for a transferal back to the RSFSR's Ministry of Culture: GDM f. 1 op. 2 KP OF-15845/617, l. 1.

[134] Cvetkovski, "Object Ideology," 204; see for example I. K. Luppol and N. A. Shneerson, *Ko vsem muzeinym uchrezhdeniiam* (n.p.: Narkompros RSFSR, 1931), 2.

[135] Kots, *O muzee evoliutsionnoi istorii*, 15f. Kots, aiming to broaden the appeal of his museum and the number of visitors, was unsuccessful in seeking a sponsor in N. Shakhov. Shakhov had just (1913) sponsored a significant sum to the Higher Courses for Women to finance the construction of a building dedicated to forensic medicine for prof. P. Minakov, who was among the professors who had been expelled from Moscow University by Kasso. A. F. Kots, *Sobranie sochinenii.: t. 2: Istoriia sozdaniia Gosudarstvennogo Darvinovskogo Muzeia* (Moscow: GDM, 2014), 95ff.

[136] A. F. Kots, *Nastoiashchee i proshloe zoologicheskikh muzeev s tochki zreniia obshcheobrazovatel'noi ikh tsennosti: K voprosu o reforme nazvannykh muzeev v otnoshenii nauchnoi i obshcheobrazovatel'noi ikh roli* (Moscow 1913), ix.

[137] GDM f. 19 op. 1 ed. 1429, ll. 65-72.

[138] Iu. V. Shubina, *Vek Darvinovskogo muzeia v gaktakh i fotografiiakh* (Moscow: GDM, 2008), 55. These numbers are impossible to verify. The most visited museum in the RSFSR was, according to Narkompros, the Hermitage with 137,933 visitors in the second half of the year 1932: A. S. Kiselev, "O muzeiakh i muzeinoi rabote," in *Sbornik postanovlenii po muzeinomu stroitel'stvy RSFSR 1931-1934*, RSFSR Narodnyi kommissariat po prosveshshcheniiu muzeinyi otdel (Moscow: Izdanie muzeinogo otdela NKP RSFSR, 1934), 4–8, here: 5.

[139] GDM f. 1 ed. 173 (NVF 619/17). See ibid., l. 1 for the number of ninth-grade visitors; for Kots' (undated) presentation on schools and museums, see GDM f. 1 (OF 10141/47)

workers, thus contributing to their "enlightenment." In return, the staff received hides from the fur company for the Darwin Museum's exhibition.[140] The social profile of the visitors thus diversified after the revolution. Aleksandr Kots effused that it was "the most rewarding mission of museums" to "introduce a broad circle of people to the latest discoveries in science and science's ultimate conclusions, so little understood and so far removed from their life."[141]

What was it like to visit the Darwin Museum? A guide to the museums of Moscow for the year 1947 announced that those who called on the Darwin Museum were admitted free of charge on six days of the week, excluding Sundays, during its regular opening hours in the afternoon.[142] Typically, visitors came in groups, and they entered a crowded space rich in visual attractions: skeletons, canvases with bearded scholars, and sculptures portraying ancient man in pursuit of game greeted them in the context of the three major topics that structured the exhibition by the 1930s-1940s: "evidence of evolution," "causes or factors of evolution," and "the history of evolutionary theory."[143] Often it was the museum's director himself who explained the meaning of the exhibits on display.[144] In the 1920s, Soviet museologists – who advocated for a scholarly approach to museums – [145] focused on objects, positing their innate ability to communicate.[146] In terms of museum pedagogy, just as in pedagogy at large, some institutions experimented initially with democratic approaches. Students at the Moscow Zoological Museum, for example, worked collaboratively without the guidance of a lecture to make sense of the objects and material they were studying. In the scathing evaluation of Grigorii A. Kozhevnikov (1866-1933), entomologist and director of the Zoological Museum, this so-called "brigade-laboratory method" was nothing but "complete chaos and a debacle."[147] There is no evidence that the Darwin Museum participated in this pedagogical experiment, which the Zoological Museum, too, abandoned by 1931. Reviews from the mid-1920s onwards attest that what awaited visitors of the Darwin Museum were "lively" excursions and lectures. These excursions took about three hours,[148] and according to the reviews of participants, they successfully rendered the scientific theories comprehensible to an audience of schoolchildren, pedagogues, and workers.[149] The lecture-based approach championed by

[140] GDM f. 19 op. 1 ed. 1429 l. 176 "[…] workers of *Kholodil'nik* select rare specimens for the museum when sorting fur […]" (July 1935); GDM f. 19 op. 1 ed. 1429, l. 177.
[141] Kots, *Sobranie sochinenii: t. 2*, 34.
[142] D. L. Malinskii, *Muzei i vystavki Moskvy: Putevoditel'* (Moscow: Moskovskii rabochii, 1947), 490f.
[143] GDM f. 1 op. 1 ed. 419 (OF-10141/2), l. 5 (on the ideal museum for the masses); This outline of the museum is based on the description from the 1930s-1940s (before 1948), see GDM f. 1 op. 1 ed. khr. 263 (OF 12430/90), ll. 1ff.
[144] See f. ex. Kots, *Sobranie sochinenii: t. 2*, 149.
[145] The Museological Department of the Historical Museum in Moscow was an important early center of Soviet museology, which existed from 1918 to 1933, and recreated under Narkompros in 1937. Museology as an academic discipline did not exist until after the collapse of the Soviet Union. See: Cvetkovski, "Object Ideology," 209.
[146] Cvetkovski, "Object Ideology," 203ff; 223.
[147] Kirill G. Mikhailovich, *Kratkii ocherk istorii Zoologicheskogo Muzeia MGU (1917–1989),* (Moscow: izd–vo KMK, 2002), p. 15.
[148] GDM f. 19 op. 1 ed. 1065 l. 1 (this review is from 1926).
[149] Reviews commenting upon the excursions and lectures, excerpted and compiled by the museum's director and therefore obviously biased, date from the mid-1920s onwards. In these reviews, visitors describe their experience and the guided tours through the museum as "dramatic (about the presentations of Kots) (GDM f. 19 op 1 ed. 1429, l.187 (1935); they characterized the lectures as "lively and deeply

the Darwin Museum was very compatible with the shift in museography towards an emphasis on narratives, cemented by the First All-Russian Museum Congress of 1930.

Held in Moscow, the First All-Russian Museum Congress opened the museum front of the Cultural Revolution. The revolutionaries had nurtured a new elite over the course of the 1920s, and state intervention became prominent in the last years of the decade in the context of what Sheila Fitzpatrick has termed Stalin's Cultural Revolution. The Academy of Sciences was purged, many associations were disbanded, and the unmistakable guideline for scientists was to pursue utilitarian research.[150] What applied to science more generally also affected the work of museums. The All-Russian Museum Congress of December 1930 played a crucial role in the process of delineating the discourse that defined the terms of museum work in Stalin's Soviet Union. Presenters at the congress defined the Soviet museum in opposition to curiosity cabinets (*kunstkamernost'*), although not all agreed with the new emphasis on *lozungi*, a shift to a narrative approach at the cost of object-centered museography. In particular, Lenin's widow, Nadezhda Krupskaia, rejected this development.[151] Historically, curiosity cabinets emerged in the sixteenth century as private collections, prior to the focus on classification that was characteristic of the Enlightenment. Curiosity cabinets brought together objects representing the skills of craftsmen and artists ("*arteficialia"*) and "*naturalia*," including the extraordinary, such as the collection of Siamese twins at Peter the Great's *kunstkamera*, a pioneering institution that was open to the public. The "*scientifica"* on display at curiosity cabinets demonstrated humankind's ability to penetrate nature.[152] *Kunstkamernost'* as it was defined in the discourse of the 1930s, however, was a derogatory term of the worst kind.[153] Museums decried as curiosity cabinets did not resemble the desired "laboratory" offering technical education outside of school; their collections were merely a "random and unsystematic" display of objects to be looked at ("*предмет[ы] 'для осмотра'»*), lacking a clearly defined message and educational agenda.[154]

Indicative of increasing oversight and attempted to control over cultural institutions was the Commissariat of Enlightenment's inquiry into whether the Darwin

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informative" (GDM f. 19 op 1 ed. 1429, l.188; students from the Tomsk Industrial Institute, 1935), and "entertaining" (GDMf. 19 op 1 ed. 1429, l. 219; GDM f. 19 op. 1 ed. 1065 (1927), l. 3 for similar comments, see passim); Kots as a lecturer received compliments for his enthusiasm, (GDM f. 19 op. 1 ed. 1065, l. 4), talent, and knowledge (GDM f. 19 op 1 ed .1429, l. 314 (date: 1949).

[150] Andrews, *Science for the Masses*; Fitzpatrick, *The Commissariat of Enlightenment*; Michael David-Fox, *Revolution of the Mind*. On the Cultural Revolution, see the discussion between Michael David-Fox and Sheila Fitzpatrick in the *Russian Review* 58, no. 2, (April 1999), 181-211. David-Fox stresses the "tangled links between an "internal" cultural revolution, directed inward toward fashioning the revolutionary vanguard and the individual revolutionary, and an "external" cultural revolution, aimed outward at both civilizing and Sovietizing the backward, not yet "conscious" masses." He explores, in his formulation, the "civilizing- enlightening (positive) program and a militant, antibourgeois, antispecialist, anti*passéiste* (negative) agenda." Michael David-Fox, "What Is Cultural Revolution?" *The Russian Review* 58, no. 2 (1999), pp. 181-201.

[151] Cvetkovski "Object Ideology," 206f.

[152] Anke te Heesen, *Theorien des Museums: Zur Einführung* (Hamburg: Junius Verlag, 2012), 33-37; Olga A. Baird, "I want the people to observe and to learn! The St. Petersburg *Kunstkamera* in the eighteenth century," *History of Education* vol. 37 no. 4 (July 2008), 531-547.

[153] Muzeinaia sektsiia mossoveta i sektor nauki narkomprosa RSFSR, *Zadachi massovogo smotra muzeev (tekhniko-proizvodstvennykh)* (Moscow: Izdanie Sektora Nauki Narkomprosa RSFSR, 1931), passim.

[154] *Zadachi massovogo smotra muzeev*, 22; *Ko vsem muzeinym uchrezhdeniiam*, 5; 9.

Museum was implementing the guidelines of the Congress. Kots, who presented at the Congress on "shock-work methods in the museum exhibition," responded with an affirmative "yes." His institution, he claimed, was engaged in a "decisive battle" against *kunstkamernost'* and had, in fact, anticipated the key issues the Congress raised. The museum's exhibition was political and dialectical, it focused on the "organized mass visitor," and it cooperated with industry.[155] To prove this point, Kots carefully excerpted reviews of visitors confirming that his institution was not guilty of *kunstkamernost'* since every item on display at the Darwin Museum served to enhance the overall narrative of the exhibition.[156]

The Darwin Museum further complied with the guidelines of the First All-Russian Museum Congress in the way the museum engaged in anti-religious propaganda.[157] The Bolshevik revolutionaries separated church and state as early as January 1918. The campaign against religion became state policy in a 1921 Central Committee resolution that called for the creation of a "'rigorous communist scientific system'." The supporters of a non-coercive approach gained the upper hand in the 1920s discussion over the right way to combat religion. They championed promoting a scientific outlook, like Emel'ian M. Iaroslavskii (1878-1943) from the League of the (Militant) Godless (1925–1942). In line with this goal, all ninth-graders received instruction in Darwinism from 1923-24 onwards, and the Komsomol ventured out into the countryside to lecture on Darwinism.[158] The Darwin Museum's atheistic profile fit in with the role Darwinism played in the Soviet campaign against religion.

Promoting the Darwin Museum's profile as an anti-religious institution, Kots quipped at a conference at the Moscow House of Scholars in 1930 that his museum was "in substance an ambulance for curing […] conscious or unconscious drug addicts," if religion was an "opium" or "a drug." The therapy the museum prescribed its patients was a narrative of perennial and irreconcilable conflict between science and religion. Scenes from Mikhail D. Ezuchevskii's series of paintings on the history of science, created for the State Darwin Museum during the decade before the artist's premature death in 1929, included "The Death of Socrates" and "Galileo's renunciation." A course on the theory of evolution would, Kots maintained, discredit religious dogma and equip atheists with factual ammunition for their war of science against religion. Darwinism undermined the story of God as creator of all life, and participants on an excursion from the Central House of Pioneers confirmed in their review from July 1928 that "the exhibits demonstrate that the creation of humankind by God is a bourgeois legend." The Darwin Museum continued to emphasize the clash between science and religion for decades to

[155] GDM f. 1 op. 1 ed. 1138 (NVF 2116/19), ll. 1; 1 ob. The museum sections of Mossovet and Narkompros announced in summer 1931 they would inspect museums during the following months to ensure the implementation of the resolutions taken at the First Museum Congress and the decision on technological propaganda taken at the June plenum of the Central Committee. *Zadachi massovogo smotra muzeev*, 3.
[156] See the review of a museum worker from Kharkov from July 1940, which stresses that "every object on display is linked to the basic theme of the museum": GDM, f. 19 op. 1 ed. 1429, l. 179, or the 1940 review of a visitor from the All Union Institute of Marine Fisheries and Oceanography, who stressed that "not one object on display lacks justification:" GDM f. 19 op. 1 ed. 1429, l. 180.
[157] *Ko vsem muzeinym uchrezhdeniiam*, 11.
[158] Richard Stites, *Revolutionary Dreams: Utopian Vision and Experimental Life in the Russian Revolution* (Oxford; New York: Oxford University Press, 1989), 101 ff.; N. a. "Darvinizm v shkole," 378.

come, fulfilling the resolution of the First All-Russian Museum Congress to engage in anti-religious education.[159]

The Commissariat of Enlightenment's inquiry,[160] the requirement to draw up five-year plans starting in 1929, and the writing of yearly reports all suggest the intensification of efforts to assert control on the part of Stalin's revolutionary government. This involvement also manifested itself in purges. In January 1931, representatives from the Workers' and Peasants' Inspectorate (RKI), the workers' brigade, and from the Museum for Public Education assembled the Darwin Museum's staff for a purge meeting. The museum's employees had to respond to questions about to their class background and political orientation. The interrogators wanted to know what the taxidermist Dmitrii Ia. Fedulov, child of a middle-peasant, thought about collectivization? How did his relative and fellow taxidermist Filipp Evtikhievich Fedulov, with whom he had apprenticed at the workshop of Fedor Lorents, view Soviet power in 1917-1918? Did they serve in the army? When and why were they demobilized? Of particular interest to the interrogators was the contribution of those under investigation to the social and cultural life of the revolutionary state. Did Dmitrii Iakovlevich Fedulov engage in socialist competition? It was impossible, Dmitrii Fedulov claimed, since there were no colleagues at other museums to compete with, and attending working groups was just as difficult, due to his tuberculosis. Filipp Fedulov had to justify the progress of the professional union and the weakening of relations with the local committee (*mestkom*). Why was there no wall-newspaper? And why were the museum and Filipp Fedulov not more engaged?[161] Fedulov, Kots, Ladygina-Kots and the other members on the Darwin Museum's team had been assembled to give an account of their class background, their life, their activism, their views, their work, and the state of the museum. The questions indicated that the interrogators found the museum in certain respects wanting and hoped for more activism and accelerated expansion.

While the purges in the early 1930s were not followed by any measures taken against the museum's staff or director, two employees suffered from more serious encounters with state organs. The first, artist Vasilii V. Vatagin (1883-1969), was mistaken for an aristocrat in 1919 during the Civil War, but soon released.[162] More consequential was the detention of artist and adherent of theosophy Mikhail M. Potapov (1904–2007). As arrests mounted in the aftermath of the 1934 murder of the head of Leningrad's party organization Sergei Kirov, the secret police (NKVD) accused Potapov in 1935 of counterrevolutionary activities and imprisoned him in the GULag. In his memoirs, he remembers confessing that he had called the Bolsheviks the anti-Christ. An enthusiast of ancient Egypt who had impressed Kots with his detailed drawings, Potapov was arrested straight from his home at the Darwin Museum, under the eyes of Kots and Ladygina-Kots. The artist had been involved in circles similar to those that the Kots

[159] GDM f. 19 op. 1 ed. 1429, l. 110.
[160] An instance of the ritual of self-criticism can be found in Kots' letter to Narkompros regarding the implementation of the guidelines for museums formulated at the 1930 Museum Congress. He underscored that relations with schools should intensify, as well as the cooperation with local museums: GDM f. 1 op. 1 ed. 1138 (NVF 2116/19), ll. 1; 1 ob.
[161] GDM F. 19 ed. 1663, ll. 1-5; GDM f. 19 ed. 1664.
[162] Vatagin notes in his memoirs that he officially changed his name to "Vatagin" in 1919, in reaction to his arrest. See: V. A. Vatagin, "Vospominaniia," in V. A. Vatagin, *Vospominaniia. Zapiski animalista. Stat'i. Sostavlenie I. V. Vataginoi* (Moscow: Sovetskii khudozhnik, 1980), 16-91, here: 15f.

couple, with their sympathies for anthroposophy, frequented before the revolution. Unlike Potapov, Aleksandr Kots and Nadezhda Ladygina-Kots were fortunate to escape persecution for their beliefs.[163]

In a further attempt to expand control, a scholarly council (*uchenyi sovet)* was established with the purpose of overseeing the institution's activities in 1940. With a history that reaches back to the university councils of tsarist times, the scholarly council as a body that provided collegial oversight was not unique to the museum. The council could issue recommendations and make requests that were binding. Its members were, for the most part, colleagues and longstanding scholarly friends of the museum and its founders. The first group of scholarly councilors serving the Darwin Museum included not only Aleksandr Kots himself, but also Nikolai Vasil'evich Vinogradov. Vinogradov, a party member since 1919 and head of the Darwin Museum's party organization, was the institution's deputy director from the first half of the 1930s until 1954. Among the other members were Nikolai Bobrinskii, Kots' former pupil with whom he had traveled to Western Europe before the revolution, and E. V. Polosatova and N. V. Kirillova, two of his former students. They worked for the Timiriazev Memorial Museum and the Anthropology Museum at Moscow University respectively.[164] The close ties among the members of the council suggest that the body's composition tended to undermine the scholarly council's function as an organ that would provide unbiased external oversight.

In sum, the pressure and oversight a cultural institution like the State Darwin Museum faced were considerable. To navigate critical situations and to garner support for the museum, director Kots emphasized the contribution of the museum to the Soviet project, as discussed above. He also turned to a network of patrons.[165] When the artist Vatagin was arrested in 1919, Kots wrote to the Commissariat of Enlightenment's Main Administration (Glavnauka) and succeeded in having him released.[166] Among the museum's beneficial contacts immediately after the revolution was astronomer and People's Commissar of the Moscow Oblast', Pavel K. Shternberg (1865-1920). Shternberg had taken part in the battle for Moscow in support of the Bolsheviks, including the storming of the Kremlin. Kots highlighted in his account of their relationship that the astronomer valued his readiness to cooperate soon after the revolution. "Under Shternberg's influence," acknowledged Kots, "informal and simple relations towards the Darwin Museum formed also with all the other functionaries of the Commissariat of Enlightenment, beginning with […] [the People's Commissar] Anatolii Vasil'evich Lunacharskii to his usually sourly assistant, Professor Mikhail N. Pokrovskii (1868-1932), who nonetheless always had a friendly word for me." A crucial contact at the Commissariat of Enlightenment was Fedor N. Petrov (1876-1973), a member of the party since 1896. From 1923-1927, Petrov headed Glavnauka, and he later worked for the Great Soviet Encyclopedia publishing house. He used his position at Glavnauka to support institutions like the Darwin Museum that were founded before the revolution in

[163] GDM f. 19 op. 1 ed. 3885, ll. 1-1ob.; Mikhail Potapov, *Egiptianin: biografiia izvestnogo khudozhnika–egiptologa, ikonopistsa, pisatelia Potapova M. M.* (Ekaterinburg: Izdatel'stvo 'dom knigi,' 1998), 19.
[164] *Uchenyi sovet GDM: 70 let so dnia osnovaniia* (Moskva, GDM, 2010), pp. 5f; p. 14. GDM f. 1 op. 1 ed. 291 (10141/546), l. 4; l. 6.
[165] For the argument that networks of patronage were a key institution of governing in Russia from tsarist times to post-Soviet Russia, see Geoffrey Hosking, "Patronage and the Russian State," *The Slavonic and East European Review* vol. 78, no. 2 (2000), 301-320.
[166] GARF f. A-2306 op. 28 d. 156, l. 22.

their scientific and educational work. The Darwin Museum benefited from Petrov's backing and Kots thanked him for helping secure resources for the Darwin Museum and the Order of the Red Banner of Labor for the taxidermist Filipp Fedulov. When the museum hit dire straits in the early 1960s, Kots turned yet again to Petrov. The director asked for Petrov's support in light of the Moscow City Council's attempt to dismiss both his son, Rudol'f A. Kots, the organizer of the institution's film section, and his wife, the museum's co-founder and senior research scholar Nadezhda Ladygina-Kots; he also feared the closure of the institution.[167] The accusation of nepotism (*semeistvennost'*) was not new – Ladygina successfully fended it off at a purge meeting in 1931.[168] When Mossovet revived the charges in 1962, Rudi Kots had to quit his work. Ladygina, a respected scientist who had been awarded the Order of Lenin, was eventually allowed to stay on with the help of a network of patrons which the museum's director enlisted to fight against the actions of Soviet institutions.[169]

Kots also tried to bring the Darwin Museum's connections into play as he lobbied for a new building for the museum. Reminiscing some forty years after the fact, Kots recounted fondly that it was Shternberg who suggested he should appeal to Nadezhda Krupskaia (1869-1939). "Taking a seat on a chair next to me […] Nadezhda Konstantinovna began to listen sympathetically to my somewhat incoherent tale about my concerns, about the Darwin Museum. I inquired about assistance for [the museum's] transfer to a different building […]. I talked about the role of Darwinism as a basis in the natural sciences for a scientific worldview."[170] As a result of Kots' appeal to Krupskaia, the museum obtained additional space in the building of the former Higher Courses for Women after the Revolution.[171] But Kots continued the quest for a building specifically for the Darwin Museum, even writing a letter to Stalin that included reviews from visitors and photographic materials.[172] The museum was promised it would get its own building and be elevated to the privileged class of a "first order" museum in 1946. Construction began in 1960, but in 1961, a heartbroken Aleksandr Fedorovich Kots learned that the site on the Frunzenskaia embankment had been re-dedicated and given to the choreographic school of the Bol'shoi Theater instead.[173] Devastated by the shattered dream of a new building, Aleksandr Kots kept writing letters to Khrushchev and others in which he listed the support of scholars and visitors for the museum.[174]

Even so, the fact that the museum survived Stalinism with no more than one arrest

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[167] GDM f. 1 op. 1 ed 1010 (OF-12497/1018) and GDM f. 1 op. 1 ed. 1010 (NVF 2116/262); on Petrov's work at Glavnauka, see also Andrews, *Science*, pp. 39f. For the quote, see Kots' obituary for Shternberg: GDM f. 1 op. 1 ed. 277 (KP OF 10141/277) [no pagination].
[168] GDM F. 11 op. 1 ed. 1805.
[169] GDM f. 1 (15845/950), l. 1; l. 1 ob.; GDM f. 19 op. 1 ed. 2590, especially l. 3. Kots appealed to Petrov in his effort to spare Ladygina the humiliation of being fired, see GDM f. 1 op. 1 ed. 1010 (NVF 2116/262).
[170] GDM f. 1 op. 1 ed. 277 (KP OF 10141/277) [no pagination].
[171] GDM f. 1 op. 1 ed. 277 (KP OF 10141/277) [no pagination]: "[It was] not without the contribution of Comrade Pozner that the premises of the Darwin Museum were shortly afterwards significantly expanded, gradually occupying a number of vast halls located on three floors - in which the Museum is still located today. And I repeat, it is more than likely that behind this energetic help of Commissioner Posner and the valuable, friendly, comradely help, stood the friendly guiding hand of Nadezhda Konstantinovna [Krupskaia]."
[172] GDM f. 1 op. 1 ed. (OF-12497/209).
[173] GARF f. A-259 op. 6 d. 2693, ll. 4-6; *Uchenyi sovet GDM: 70 let*, p. 12.
[174] GDM f. 1 op. 1 ed. 1176 (OF 12497/204) [no pagination].

and that most of the employees worked for the institution for decades is remarkable for being so unusual.[175] Possibly, the failure to obtain a new building in the early 1960s was an expression of the changing status of Darwinism. Even though Khrushchev remained invested in biology, as evidenced in his support for Trofim D. Lysenko,[176] and although scientific enlightenment as a means of furthering atheism received renewed attention during the Khrushchev years, Darwinism was eclipsed. While the 1959 centenary of the publication of *The Origin* was celebrated and Darwinism continued to be praised as the scientific basis of dialectical materialism,[177] space travel and the well-loved cosmonauts became the new popular faces of efforts to undermine religion.[178]

"No revolutionary movement without a revolutionary theory"[179]

As an institution dedicated to the dissemination of Darwinism, the State Darwin Museum popularized a theory that was a cornerstone of Bolshevik ideology. As the entry in the first edition of the Great Soviet Encyclopedia (1930) stated, Darwinism was "a natural and necessary addition to the teachings of Marx-Engels," for it "aligns harmoniously with Marxism to a single teaching on development – first biological, then social." "[L]ike Marxism," Darwinism rejected "all mysticism in explaining the laws of development."[180] The second edition (1952) formulated the special relationship to Darwinism in the Soviet Union more succinctly: "It was namely in the Soviet Union that [Darwinism] found its second home."[181] The friendly reception in the Soviet Union stood in stark contrast to the

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[175] As is apparent from the report on the year 1949, most of the staff at the GDM worked there for decades: Aleksandr Kots for 55 years, taxidermist Filipp F. Fedulov for 55 years, Nadezhda Ladygina-Kots for 40 years, taxidermist Dmitrii Ia. Fedulov for 37 years, vice director Vinogradov for 17 years, Ladygina's assistant Natasha F. Levykina for 12, Petr P. Smolin for ten years, etc. The total number of employees is listed as 16, three of whom worked as cleaners, one as collector (*inkassator*): GDM f. 1 ed. 291 (OF 10141/0546), l. 4

[176] Eduard Kolchinskii and Sergei Shalimov, "'Ottepel'' i genetika: iz istorii publikatsii pervogo otechestvennogo uchebnika po genetike," *Rossiiskaia istoriia* no. 4 (2017), 75-83.

[177] S. L. Sobol', "Charl'z Darvin i religiia," *Nauka i religiia* no. 2 (1959), 6-10; L. R. Kharakhorkin, "Druz'ia i vragi darvinizma: (Pervye shagi novogo ucheniia v Rossii)," *Nauka i religiia* no. 3 (1959), 19-23. Articles on Darwin appeared only sporadically after that, discussing the "myth about Darwin;" highlighting the troubled history of Darwinism abroad; analyzing the differences between Darwin and Wallace regarding the nature of the mind and consciousness; or portraying Darwin for example as a founder of scientific atheism: Pet Sloun, "Mif o Darwine," *Nauka i religiia* no. 4 (1960), 30-34; G. Gerasimov, "Darvin pod zapretom," *Nauka i religiia* no. 1 (1962), 48f.; G Gurev, "Spor Darvina i Uollesa o prirode chelovecheskogo soznaniia," *Nauka i religiia* no. 10 (1962), 24-27; G. Gurev, "Spor o mirovozzrenii Charlza Darvina*," Nauka i religiia* no. 6 (1973), 48-54; Eduard I. Kolchinsky, "Darwin's Jubilees in Russia," in *The Literary and Cultural Reception of Charles Darwin in Europe*, eds. Thomas F. Glick and Elinor Shaffer (London: Bloomsbury, 2014), 288-315; A. A. Paramonov and A. S. Severtsov, "Darvinizm," *Bol'shaia Sovetskaia Entsiklopediia* (Moscow: Izdatel'stvo "sovetskaia entsiklopediia," 1972), 1637-1641, here: 1638.

[178] On atheism under Khrushev, see Victoria Smolkin, *A Sacred Space is Never Empty: A History of Soviet Atheism* (Princeton: Princeton University Press, 2018), 57ff.

[179] «Без революционной теории не может быть и революционного движения:» GDM f. 1 (NVF 2116/0498) ed. 262, l. 10.

[180] I. Agol, "Darvin i Darvinizm," (Moscow: Izdatel'stvo "sovetskaia entsiklopediia," 1930), 430-472, quote: 433

[181] "Darvinizm," *Bol'shaia Sovetskaia Entsiklopediia* (Moscow: Izdatel'stvo "sovetskaia entsiklopediia," 1952), 370-378, quote: 371.

abuse and misuse Darwinism experienced in the "bourgeois" and "social-fascist" context.[182] There, teaching evolutionary theory was prohibited, teachers like John Thomas Scopes were put on trial (the 1925 Tennessee "monkey trial"), Darwinism was used to justify racism, and anti-Darwinism went hand in hand with anti-revolutionary activity.[183]

Notwithstanding the importance attributed to Darwinism in the Soviet Union, key aspects of Darwin's evolutionary theory presented important intellectual challenges that the State Darwin Museum, too, had to engage. Upon closer investigation, the "single teaching on development of Marxism-Darwinism" linked less harmoniously than geneticist Izrail' Agol (1891-1937) optimistically posited in 1930. The rate and character of evolution, including the question of "revolutions" or jumps (*skachki*), chance, and the human-animal relationship, were all points of contention. Engaging these tensions meant pondering the relationship between the laws of natural and human history and considering the place of humankind in nature. The Great Soviet Encyclopedia's 1952 edition prepared its audience for a critical reading of Darwin with a quote in which Marx lauded Darwin's achievements "[i]n spite of all of its shortcomings."[184]

Marx left an ambiguous record on Darwinism. In his 1861 letter to Lassalle, the same letter in which he alluded to the shortcomings of the theory of evolution, Marx affirmed that "Darwin's theory serves as the basis in natural science for the class struggle in history." Failing to further explicate the exact connection between the two theories, he left it up to Soviet authors, among others, to define the relationship. They pointed out that Darwin proposed a dynamic view of nature, just as Marx proposed a dynamic view of history. Boris M. Zavadovskii (1895-1951), director of the Timiriazev Museum in Moscow and later member of the Lenin Academy of Agricultural Sciences (VASKhNIL), highlighted in 1925 that struggle played an important role in both thinkers' theories of development – class struggle in the case of Marx, and the struggle for survival among representatives of different (interspecific) as well as among members of the same species (intraspecific) in the case of Darwin.[185] Qualifications applied, however, for the reception

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[182] ARAN, F. 350 op. 1 d. 590, l. 95.

[183] See f. ex. Zavadovskii's presentation at the Communist Academy in 1932: ARAN f. 350 op. 2 d. 481, ll.1-50, here: l. 13f: "we notice that for capitalism the very idea of evolution, of evolution as such, becomes terrible, and we observe the painful revision of Darwinian theory not on anti-Darwinist, but on anti-revolutionary foundations, as for example in the monkey processes in America and under various other flags [pod raznymi drugimi flagami] attempts are made to destroy [and] to undermine the significance of the evolutionary idea as such." [...] "the campaign against Darwinism finds support from those who reject its conclusions regarding the common origin of the negro [negrov] and white races"

[184] *"Darvinizm," Bol'shaia Sovetskaia Entsiklopediia* (1952), 370. The Marx quote is taken from Marx' 1881 letter to Lassalle: *Karl Marx Friedrich Engels Werke* vol. 30 (Berlin: Dietz, 1974), 578. "Darwin's book is very important and serves me as a basis of the class struggle in history […] in spite of all its shortcomings, it is the first time that 'teleology' in nature is not only dealt a fatal blow, but its rationality is empirically explained" [„Sehr bedeutend ist Darwins Schrift und passt mir als naturwissenschaftliche Unterlage des geschichtlichen Klassenkampfes…Trotz allem Mangelhaften ist hier zuerst der ‚Teleologie' in der Naturwissenschaft nicht nur der Todesstoß gegeben, sondern der rationelle Sinn derselben empirisch auseinandergelegt."] Letter Marx to Lassalle, January 16 1861.

[185] See f. ex. Zavadovskii's presentation on "Darwinism and Marxism" on November 28 1925 at the Communist Academy: "Another position, which both theories undoubtedly share, is the main idea [...] of development, which, understood in a general sense, of course, also links Darwinism and Marxism. For a Marxist, any social and historical phenomenon is dynamic, has its own history [...]. The same [idea] guides the Darwinian evolutionist, who first advanced this principle. ARAN f. 350 op. 2 d. 48, l. 6.

of Darwinism in Russia from the nineteenth century onwards was characterized by the rejection of Malthus' influence on the theory of evolution. Prominent biologists in Imperial Russia as well as the anarchist Petr Kropotkin (1842-1921) contended that not only struggle but also mutual aid contributed to evolution in important ways.[186] Encouraged by none other than Stalin to address the "defects" of Darwin's theory,[187] neo-Lamarckist agrobiologist Trofim D. Lysenko invoked Engels' letter to Lavrov to bolster his rejection of Darwin's emphasis on the struggle for survival. The occasion for Lysenko's speech was the infamous Academy of Agricultural Sciences' meeting in the summer of 1948 that resulted in the banning of genetics. Lysenko claimed that Darwin had simply applied "Hobbes's teaching on *bellum omnium contra omnes* [war of all against all] and the bourgeois economic teaching on competition, along with Malthus's population theory" to nature. The same theories, argued Lysenko (quoting Engels, are transferred back from organic nature to history to prove the "eternal laws" allegedly underpinning human society."[188]

This indicates that, even if struggle was a key factor in both Darwin's and Marx' theories, Soviet thinkers decidedly rejected the application of the laws of nature to society. Geneticist Agol, member of the Communist Academy and author of the 1930 entry on Darwinism in the Great Soviet Encyclopedia, reiterated a widely shared opinion dating back to Marx and Engels when he maintained that social Darwinism was incompatible with Marxism's emphasis on the unique qualities of humankind. Where Darwin emphasized gradualism and the proximity of humankind to other animals, Soviet scientists, including the Darwin Museum's own primatologist and comparative psychologist Nadezhda Ladygina-Kots, insisted on qualitative differences, on a gulf separating humans from all other species.[189] Ever since we humans started manufacturing tools – producing the "means of subsistence" – we emancipated ourselves from the dictates of nature and, unlike other animals, turned into conscious subjects rather than objects of history. Thus, when it comes to human history, biology is not a decisive factor ("*tam biologii delat' nechego*"); the laws of natural history that Darwin uncovered do not apply to history, which Marx studied.[190] Darwin himself went down the wrong path of

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[186] Peter Kropotkin, *Mutual aid, a factor of evolution*, ed. and with an introduction by Paul Avrich (New York: New York University Press, 1972). For a detailed account of the Russian rejection of Darwin's Malthusian influence: Daniel Todes, *Darwin without Malthus*: *The Struggle for Existence in Russian Evolutionary Thought* (Oxford: Oxford University Press, 1989); The emphasis on mutual aid was played up particularly under Lysenko's influence: GDM f. 19 op. 1 ed. 41, ll. 23ff; f. 19 op 1 ed. 1059 l. 15.

[187] Kirill O. Rossianov, "Stalin as Lysenko's Editor: Reshaping Political Discourse in Soviet Science," *Russian History* vol. 21, no. 1 (1994): 49-63, here: 58.

[188] T. D. Lysenko, *O polozhenii v biologicheskoi nauke: doklad na sessii Akademii sel'skokhosaistvennykh nauk im. V. I. Lenina 31 iiulia 1948* (Moscow: OGIZ-SEL'KHOZGIZ, 1948), 7. See Engels' Letter to Petr Lavrov from November 1875: *Marx Engels Werke vol. 34* (Berlin: Dietz, 1966), 169-172, quote: 170. The paragraph that Lysenko quotes is explicitly directed against "bourgeois [social] Darwinists;" however, Engels makes it abundantly clear that he opposes any one-sided explanation of evolution, whether solely focused on struggle or on cooperation, and accepts the struggle for survival only as a provisional explanation. Ibid., 169.

[189] On Ladygina-Kots, see chapter three of this dissertation.

[190] I. I. Agol, "Darvin i Darvinizm," 468f. See f. ex. also ARAN f. 255 op. 1 d. 53 l. 3: "It is well known that Marxism builds upon Darwinizm [*prodolzhenie darvinizma*], but this does not imply that Darwinism can be applied to the social sphere. This would be a basic methodological error." This echoes Engels and Marx, who argued that "the laws of life in animal societies" could not simply be transferred "to human society" because humankind "produces […] the means of subsistence:" *Karl Marx Friedrich Engels Werke*,

social Darwinism when he, influenced by the society and times he lived in, considered the "oppression of backward races" and colonialism "justified by biological laws," argued Zavadovskii in a publication on Darwinism prepared for the Communist Academy in 1931.[191]

Regardless of the position that the laws of biology could not – and should not – be applied to society, biologists, especially in the Stalinist years, debated the tensions between the laws of human and natural history and thus the place of humankind in nature. For where Marx had revolution in mind, Darwin posited gradual evolution. Darwin's gradualism built on geologist Charles Lyell's work, which broke with catastrophism – the idea that earth's history is characterized by floods and other violent incidents, stimulated by Cuvier's *Discourse on the Revolutions of Earth's Surface* (1812). Lyell posited continuity in the history of the earth.[192] "I have been astonished how rarely an organ can be named, towards which no transitional grade is known to lead," wrote Darwin in *The Origin*. He embraced "that old canon in natural history of 'Natura non facit saltum,'" a canon that includes Linnaeus and St. Hilaire. His theory of natural selection, explained Darwin, elucidated why evolution did not proceed by leaps – "for natural selection can act only by taking advantage of slight successive variations; she can never take a leap, but must advance by the shortest and slowest steps."[193] Darwin in his emphasis on gradualism would prove hard to translate into Bolshevik revolution.

Even if the consensus against the application of biological laws to history and therefore the opposition to social Darwinism was strong, the tensions between Darwinism and Marxism were troubling and an attempt was made to reconcile the theories of evolution and history. Pursuing this endeavor, the author(s) of the entry on Darwinism in the second edition of the Great Soviet Encyclopedia (1952) wholeheartedly embraced the notion that Darwinism needed to be corrected with Lenin in mind. Darwin's rejection of leaps was a clear case of bias, maintained the entry, for Darwin knew of instances of sudden changes in organisms, but dismissed them as exceptions. Quoting Stalin, they wrote "Darwinism rejects not only Cuvier's cataclysms, but also dialectically understood

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vol. 20 (Berlin: Dietz, 1969), 565 Emancipation from the dictates of nature, qualified by Engels in his *Anti-Dühring,* would only be achieved upon socializing all means of production and planned production, ending the struggle for survival of: *Marx Engels Werke,* vol. 20 (Berlin: Dietz, 1969), 264; Similarly his *Sialectics of Nature,* written in the late 1870s and published posthumously: Ibid., 324; See also *German Ideology*: *Marx Engels Werke*, vol. 3 (Berlin: Dietz, 1969), 21, and Engels' letter to Lavrov, *Marx Engels Werke* vol. 34, 170.

[191] ARAN f. 350 op. 1 d. 839 ll. 37f: Quote: Ibid., 38. The Great Soviet Encyclopedia, f. ex., singled out German biologist and popularizer of Darwin Ernst Haeckel for legitimizing his aristocratic leanings with Darwin's struggle for existence: Agol, "Darvin i Darvinizm," 433. The Presidium of the Communist Academy discussed the ways in which the "bourgeoisie and social democrats use aspects of Darwinism for the purposes of their own class interests:" ARAN f. 350 op. 1 d. 590, ll. 94f.

[192] Bowler, *Evolution*, 9f. On catastrophism, see: Ibid., 112-117. Darwin had been strongly influenced by the gradualist theory of the geologist Charles Lyell's, which, however, had been questioned already during Darwin's lifetime. Lord Kelvin's calculations (proven wrong around 1900) stated that the earth was much younger than Lyell had assumed and than was necessary for evolution in Darwinian terms. Ibid., 224ff.

[193] Darwin, *The Origin*, 194. On the "historical canon" upon which he built, see James T. Costa's annotation in the margins. Ibid. The question whether Darwin was a "pure" gradualist was widely debated in the context of Niles Eldredge's and Stephen Jay Gould's theory of the punctuated equilibrium (1972). See f. ex. Frank H. T. Rhodes, "Darwinian Gradualism and Its Limits: The Development of Darwin's Views on the Rate and Pattern of Evolutionary Change," *Journal of the History of Biology* 20, no. 2 (Summer, 1987), 139-157.

development, including revolution, whereas from the point of view of the dialectical method, evolution and revolution, quantitative and qualitative changes are two necessary forms of the same movement."[194] What this attempt to reconcile Darwinism and Marxism indicated is the attempt to naturalize the theory of history; references to natural history were meant to legitimize the theory of revolution, hence it mattered that both theories aligned.

Responding to the tension between evolution and revolution, Darwin's gradualist theory of natural history and Marx's theory of human history, was vital for the Darwin Museum. The Darwin Museum's report on the year 1949 confirmed that the museum integrated "the occurrence of saltations [leaps]" into its exhibition.[195] Guiding visitors through the exhibition, Aleksandr Kots revealed that even Darwin's most ardent defenders, namely Thomas Henry Huxley, criticized the weight Darwin attributed to gradualism in evolution.[196] A section of the museum, entitled "No revolutionary movement without a revolutionary theory," according to a description from 1963-64, featured a prominent quote by Lenin: Darwin, announced Lenin, was the first to put biology on a "scientific basis, establishing the variability of species and the continuity between them;" however, Lenin also characterized development in nature as including "slow evolution and fast jumps," and not just "gradualness."[197] Visitors to the Darwin Museum also encountered this narrative of leaps or qualitative differences in the section of the exhibition in which the Darwin Museum presented the original research of its own staff, namely the section dedicated to Nadezhda Ladygina-Kots' work on comparative psychology and the behavior of animals. Here, too, the museum pointed out how Darwin had, unjustly, privileged gradualism and failed to acknowledge the importance of qualitative differences, in this case in the evolution from animal to humans.[198]

The timeline of the impact of the debate on evolution and revolution on the Darwin Museum is telling. The museum was particularly eager to affirm the importance of "revolutions" or leaps in 1949, shortly after Lysenko gained Stalin's decisive endorsement and succeeded, in August 1948, in turning the tide against genetics in the Soviet Union. The geneticists, just as Lysenko and his followers, drew connections between their research, Marxism, and Darwinism, all the while accusing the other side in this "science war" of being anti-Darwinist. What proved decisive in the end was Lysenko's strategy of portraying his work as closely connected to practical problems and as inspired by his compatriot Ivan V. Michurin (1855-1935). This strategy paid off with the onset of the Cold War.[199] For the Darwin Museum, the endorsement of Lysenkoism was a reversal of its earlier position. The museum's connections with geneticists both Russian and foreign were deep: the museum's co-founder Ladygina-Kots had studied

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[194] N. a. "Darvinizm," *Bol'shaia Sovetskaia Entsiklopediia: Vtoroe izdanie* vol. 13 (Moscow: Izdatel'stvo "Sovetskaia entsiklopediia," 1952), 370-378, quote: 373. The author(s) highlighted that Darwin's gradualism in evolution related to his attempt to depart from creationism. Ibid.

[195] GDM f. 1 op. 1 ed. 291. Since this was one year after genetics were outlawed, the reference is to saltations in the Lysenkoist sense.

[196] See Kots' 1963 lecture on the problem of species: GDM f. 1. (OF 10141/633) ed. 64, ll. 12f.

[197] The description of "two halls of the museum" dates to 1963-64, since it refers to N. N. Ladygina-Kots as "deceased," and Kots, who authored the text, died in 1964. See: GDM f. 1 (NVF 2116/0498) ed. 262, l. 10.

[198] See the 1959 lecture held by the museum's vice director, E. N. Vasil'ev: GDM f. 19 op. 1 ed. 41, l. 8. Rossianov, "Stalin;" Krementsov, *Stalinist Science;*" Ethan Pollock, *Stalin and the Soviet Science Wars* (Princeton: Princeton University Press, 2006).

with cytologist Nikolai Kol'tsov,[200] and Aleksandr Kots had visited Hugo de Vries on his journeys to Western Europe, one of the re-discoverers of Mendel's law of inheritance. In the late 1920s, Kots mentioned with pride a herbarium of "samples of mutation from the world of plants" from Hugo de Vries as a "highly valuable collection" in the museum's possession.[201] Sympathies for genetics shaped the exhibition initially[202] and shone through again in the 1960s, after Stalin's death. To visualize leaps in evolution, the museum employed, for example, a series of paintings in which the artist Komarov depicted foxes with variously colored coats in different environments, some of the foxes blending in with the vegetation in the background, others visually standing out. What visitors were supposed to learn from these paintings were "the idea of mutational changes (by leaps [*skachkoobraznykh*]) in animals," as well as the idea that some of these changes improve the chances of survival, some do not make a difference, and others still – like a coat that stands out from the surrounding vegetation – diminishes the specimen's prospects.[203] After 1948, however, the museum embraced Lysenko's Neo-Lamarckist "Michurinist" "creative Darwinism," according to which the environment played a crucial role in evolution and acquired characteristics were passed on to the next generation. Lysenko stressed the role of leaps in evolution and considered saltations decisive in speciation: "Such a leap is prepared by the vital activity of organic forms themselves, as the result of quantitative accumulations of responses to the action of definite conditions of life."[204]

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[200] Nadezhda Ladygina-Kots, co-founder of the museum, was a student of cytologist Nikolai Kol'tsov at the Higher Courses for Women in Moscow. In Soviet times, Kol'tsov was the head of the Institute for Experimental Biology and a very outspoken critic of Neo-Lamarckism. Kots underscores in his obituary the support the Darwin Museum and he personally received from Kol'tsov at the Higher Courses for Women, GDM f. 1 op. 1 ed. 277 (KP OF 10141/112), [no pagination]; on Kol'tsov's engagement against neo-Lamarckism, see: Krementsov, "*Darwinism*," 224ff.

[201] GDM f. 1 op. 1 (KPOF 15845/731), l. 2.

[202] In 1937, the museum planned an exhibition on "Mendelism and genetics in animal husbandry," GDM f. 19. op. 1 ed. 3145, l. 1. A protocol from November 1940 reports that the "comrades experimenters," ornithologist P. Smolin and Levykina, Ladygina's assistant, conducted (unspecified) genetic research on mice and rats at the museum: GDM f. 19 op. 1 ed. 1711, l. 2. The museum presented Lamarckism and the "theory about the role of the use and disuse of organs in the process of the evolution of higher animals" in the 1930s-40s in an "exclusively critical" light: GDM f. 1 op. 1 ed. 263 (OF 12430/90), ll. 1ff.

[203] GDM f. 1 op. 1 (OF 12497/833) ed. 451, ll. 4f. Geneticists argued that mutations drive evolution. The theory of evolution they endorsed was one of saltation, not gradualism, which came under attack not only in biology but also in geology: the discipline that had originally influenced Darwin's gradualism. Experimental biologists worked in laboratories and therefore focused on small breeding populations. Many initially rejected adaptation to an external environment and natural selection as central to evolution. An exception was Hugo De Vries, who maintained that natural selection should still be taken into account to explain which mutations endured. Bowler, *Evolution*, 224ff. But did every mutation bring about a new species? And could selection as the "mechanical cause" not be productively united with the "material basis (the gene)," contrary to the theories of many geneticists, such as the early Thomas H. Morgan? That genetics and Darwinism were not mutually exclusive became established only with the "Evolutionary Synthesis" put forward in the Anglophone world, where genetics were particularly well organized. The synthesis was formulated in seminal works published by the Russian émigré to America Theodosius Dobzhansky and others in the 1930s and later: Bowler, *Evolution*, 224-273; 325-346; V. B. Smocovitis, "Unifying Evolutionary Synthesis and Evolutionary Biology," *Journal of the History of Biology* vol. 25. no. 1 (1992), 1-65.

[204] Lysenko, *O polozhenii*, 28; 42f:

In addition to challenging Darwin's gradualism, Lysenko's "creative Darwinism" was one of several theories that took issue with the role of chance in evolution, even though both Marx and Lenin praised Darwin's rejection of teleology as one of his key insights. Darwin explained the seeming perfection of life on earth in materialist terms, as the product of natural selection, acting upon chance variation. This theory, as Lenin explained and as the Great Soviet Encyclopedia (1952) reminded its readers, was incompatible with an understanding of life created by God and of immutable species.[205] Be that as it may, dismissing teleology based on a religious worldview did not make the importance Darwin attributed to chance any more palatable. In the decades around the turn of the twentieth century, non-Darwinian theories proliferated – not just in (Soviet) Russia. One of these theories was Lev S. Berg's (1876-1950) theory of nomogenesis. Published in 1922, his theory of directional and progressive evolution on the basis of laws as opposed to chance and natural selection attracted much attention.[206] In the era of late Stalinism, decades after Berg's theory was abandoned and discredited as "anti-Darwinist,[207] Lysenko, too, criticized the emphasis on the role attributed to chance in evolution, He, however, associated chance with genetics. "On the basis of this kind of science ["mendelizm-morganizm, built solely on chance"] planned work, goal-oriented application is impossible, scientific projection is unattainable," Lysenko argued in August 1948. Whereas the mutations geneticists considered were random, Lysenko's "Michurinist" biology posited that the formation of new species by leaps "can absolutely be studied and directed," as long as researchers controlled the environmental influences. Michurin, he announced, was not satisfied with the dependence on the whims of nature and he was right when he said "our task is to wrest [favors] from her." Creative Darwinism permitted overcoming chance in evolution and the possibility of directing the development of organisms according to the needs and wishes of humankind.[208]

While Lysenko in 1948 insisted on leaps in evolution, Stalin, in articles on linguistics (1950), revised his earlier stance on the question and embraced the idea of development as a result of accumulated minor changes, rather than revolutions. Shortly before Stalin's death in 1953, criticism of Lysenko's view on revolution and evolution surfaced in the *botanical journal*, but Stalin died before a possible campaign against the agrobiologist could have been launched.[209] By 1980-1981, on the eve of Brezhnev's death and in the context of the era commonly referred to as "stagnation," the Darwin Museum no longer propagated leaps in evolution, even though the idea still had its proponents.

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[205] "Darvinizm," *Bol'shaia Sovetskaia Entsiklopediia* (1952), 370; 375. Marx wrote approvingly to Lassalle in 1861 that "[Darwin's theory of evolution] has for the first time dealt a deathblow to the 'teleology' of natural science." For the German original, see: *Karl Marx Friedrich Engels Werke* vol. 30, 578.

[206] L. S. Berg, *Teorii evoliutsii* (Peterburg: Academia, 1922), especially 93ff. "New formations in organic forms do not at all occur by chance, but according to laws [*zakonomerno*]" Quote: Ibid., 98. On non-Darwinian theories of evolution, such as neo-Lamarckism or orthogenesis, see Bowler, *Evolution*, 224ff. On Berg, See Eduard I. Kolchinsky, "Darwinism and Dialectical Materialism in Soviet Russia," in *The reception of Charles Darwin in Europe*, eds. Eve-Marie Engels and Thomas F. Glick (London; New York: Continuum, 2008), 522-551, here: 534f.

[207] Although Berg's theory of nomogenesis was dismissed and Berg accused of "anti-Darwinism," he remained well respected as an ichthyologist, as is evident from O. Iu. Shmidt's letter from 1940: ARAN f. 2 op. 1 d. 54, l. 14.

[208] Lysenko, *O polozhenii*, 28; 42f; 55f; see also Lysenko's speech in honor of the 100th anniversary of the publication of *The Origin* in 1959: ARAN f 1521 op 1 68, ll. 4f; l. 7. Pollock, *Stalin*.

[209] Rossianov, "Stalin," 62.

Lysenkoist Aleksandr P. Kuziakin (1915-1988), for example, did not hide his disappointment with the exhibition proposal put forth by the Darwin Museum under the leadership of Vera N. Ignat'eva, director from 1964-1986. Asked to evaluate the plans for a new design and outline for the exhibition, to be erected in the new building that was still under construction, Kuziakin reminded the museologists that Darwin had to be read alongside Lenin. He recommended his own contributions on "sudden leaps in evolution" (*bystrikh skachkakh*), developed in 1940 and published in full length in 1956 and 1958, as an example of scholarship that provided a critical reworking of Darwin in line with Bolshevism, a reconciliation of evolution with revolution.[210]

Conclusion

A group of pioneers visiting the Darwin Museum in 1928 praised its exhibits as some of the "best material for the growth and consolidation of a materialist view of nature and society," which testified to the museum's ideological and political importance.[211] The museum itself defined its mission in its plan for the year 1937 as the promotion of "a Marxist worldview."[212] By all appearances, the museum adapted quickly to the changed political circumstances after the October Revolution of 1917. The museum's director of many years, Aleksandr Kots, sought out patrons to whom he appealed for support in order to enhance his institution or to counter interventions into the museum's affairs. Leading the museum across the revolutionary divide, he refashioned it as a Soviet institution, embracing slogans that appealed to the Bolshevik revolutionaries. The State Darwin Museum in the Soviet era took up the goal of disseminating to the masses anti-religious propaganda, materialism, and a scientific worldview through the popularization of Darwinism.

Until his death in 1964, Aleksandr Kots led the institution with considerable political acumen. He was able to negotiate carefully the dangers that came with advocating a highly politicized scientific theory, especially through the critical years of Stalinism. Scholars writing against the notion of the Soviet Union and Soviet ideology as monolithic have highlighted how difficult it was to succeed in the task before a museum director like Kots, noting that what would become orthodoxy was not predictable; the "science war" in biology between the neo-Lamarckist Lysenko and his adherents on the one hand, and geneticists on the other is one example.[213] Lysenko emerged victorious in 1948, after many years of controversy in which both sides claimed to represent true Darwinism and Marxism. Forced to change its stance, the State Darwin Museum hastily adopted a "Michurinist"-Lysenkoist narrative, and refrained from further mention of genetics, hitherto portrayed positively in the exhibition.

Adapting to the evolving narratives of Darwinism required the museum to highlight where Darwin was found to have erred. Most prominently, this pertained to the question of chance and gradualism, aspects difficult to reconcile with Bolshevik ideology and the modernizing state's desire to transform nature according to human needs and

[210] GDM f. 19 op. 1 ed. 923, ll. 19f.
[211] GDM f. 19 op. 1 ed. 1429, l. 110; see also the review of a group of participants in an anti-religious seminar GDM f. 19 op. 1 ed. 1429, l. 219.
[212] GDM f. 19 op. 1 ed. 3145, l. 1.
[213] Krementsov, *Stalinist Science*.

wishes. The consensus in the Soviet Union was to condemn Social Darwinism – the application of Darwinism to society – and researchers and ideologues conceptualized humankind as separate from nature due to the ability to master the environment. Guilty of "zoologism" was anyone who did not distinguish between humans and other animals, for example, by attributing meaning to the taxonomic differences in human races and failing to understand that the only consequential categories when it came to humans were social.[214] The tensions between Darwin's gradualist theory and the theory of history and change via revolution that Marx, Lenin, and Stalin embraced were hotly debated, despite the insistence on the separation of *homo sapiens* from the animal world and the rejection of the application of biological laws to human society. Under Stalin, a consensus emerged according to which Darwin's theory was flawed in important ways. The error consisted in the failure to confirm Marxism-Leninism-Stalinism's understanding of development via revolution as well as the Promethean, Lysenkoist desire to direct evolution. Stalin departed from this consensus when he allowed for gradual change shortly before his death; not all were willing to follow suit.

Ultimately, this debate on evolution and revolution indicates that ideologues and scientists in the Soviet Union struggled with the separation of natural and human history. The debates centering on Darwinism thus serve as a lens onto the conceptualization of the place of humankind in nature, which proved more contentious than the rejection of social Darwinism and oft-repeated characterization of humans as different from other animals suggests. While the exhibition at the Darwin Museum reflected the larger debate in the Soviet Union, research conducted at the museum also contributed and shaped the discussion on the nature of and relationship between humans, animals, and the environment, as the following chapters will elucidate.

[214] Races as taxonomic categories were acknowledged to exist, but deprived of social meaning and understood to be superseded by social categories and gradually disappearing (*sniatie)*. Anthropologist Arkadii I. Iarkho identified as crucial moments in this process the loss of a racial instinct, intermixture of the races, abandonment of natural selection, and a changed relationship to the geographical environment: A. I. Iarkho, "Protiv idealisticheskikh techenii v rasovedenii SSSR," *Antropologicheskii zhurnal*, no. 1 (1932), 9-23.

Chapter 3: Darwin's Bestialization of Humankind Reconsidered: Nadezhda Ladygina-Kots and Soviet Comparative Psychology

"'Ah! We must redefine man, redefine tool, or accept chimpanzees as human!'"
Louis Leakey.[215]

On the Kremlin desk of Vladimir Il'ich Lenin in Moscow, the seat of the Bolshevik revolutionary government after 1918, stood a sculpture that portrayed an ape, seated on a tome of Darwin's writing. Holding a human skull, the ape is seemingly musing, like a scholar, over the nature of his close relative.[216] The artist, Hugo Reinhold, translated with this sculpture the challenge of decentering humankind into a visual language, providing a cartoonist's exaggeration to Darwinian theory. But contrary to what Reinhold's sculpture suggested, Darwin never declared animals superior to humankind. What he did argue in *The Descent of Man, and Selection in Relation to Sex* (1871) and *The Expression of Emotions in Man and Animals* (1872), however, is that similarities outweigh the differences between humans and – other – animals, and not just in physiological terms.

In Imperial Russia, as elsewhere, Darwin's "monkey theory" proved controversial, and criticism of Darwinism intensified after the publication of *The Descent* and *Expression of Emotions*, which were both available in Russian translation within a year of the English publication.[217] Theologians in particular took issue with Darwin's evolutionary explanations for all things living and their traits, not making an exception for humans or morals and thus rejecting the theory of the divine origin of morality.[218] The fact that the monkey statuette found its way to the desk of V. I. Lenin is symbolic of the reversal of attitudes towards Darwinism in Soviet times. After the October Revolution of 1917, Darwin's theory of the beastly origin of humankind found an enthusiastic reception as an important argument against religion. Darwinian anthropogenesis invalidated the book of Genesis and thus helped to undermine Christianity, so firmly associated with the ideology of the tsarist Ancien Régime.[219]

However, Darwin's stance on the human-animal relationship in *Descent* and *Expression* remained remarkably provocative in the Soviet context. Bent on dominating nature, Soviet culture celebrated the engineer as the ultimate *homo faber* ("Man the

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[215] Leakey's telegram in response to Jane Goodall's news that she had observed chimpanzees using tools in the wild, quoted in: Jane Goodall with Philipp Berman, *Reason for Hope: A Spiritual Journey* (New York: Soko Publication Ltd., 1999), 67.

[216] Janet Browne, "Darwin in Caricature: A Study in the Popularization and Dissemination of Evolution," *Proceedings of the American Philosophical Society* 145 (2001), 496-509, here: 497.

[217] Alexander Vucinich, *Darwin in Russian Thought* (Berkeley: California University Press, 1988), 50ff.

[218] Vucinich, *Darwin*, 240ff; 382.

[219] Soon, journals reported that evolutionary theory was under siege in classrooms in the US and Europe. The 1925 trial of the American teacher John Scopes for teaching evolution, in violation of Tennessee's ban on the subject from public schools, did not go unnoticed in the Soviet Union. The "monkey trial" served as a model for a similar trial in Romania. M. M. Beliaev, "O prepodovanii zoology v srednei shkole," *Biologiia i khimiia v srednei shkole: metodicheskii sbornik* no. 3 (1934), 3-25, here 24f. For a succinct discussion of the Scopes trial and the myths surrounding it, see Bowler, *Evolution,* 324. Notes in the archive of the Darwin Museum on the topic of Darwin's *The Descent of Man* underscore the oft-repeated point that Darwin "debunked the notion that Man […] came into being by an extraordinary [*osobym*] act of creation." GDM f. 19 op. 1 ed. 580, l. 1.

Maker").[220] If what defines human identity as *homo faber* is the ability to transform the environment, can our species be understood as a simple part of nature, an animal among other animals? The question of humankind's place in nature remained subversive and politicized even after the October Revolution and the Bolshevik endorsement of Darwin's theory of evolution.

In 1913, Nadezhda Nikolaevna Ladygnia-Kots (1889-1963), co-founder of the Darwin Museum, visited Down House, where Charles Darwin had spent most of his adult life composing his theory of evolution. As she explored Down, she noted that the chestnut trees must be the same that had witnessed Darwin passing by in the shade of their foliage.[221] For her, the time at Down was evidently a kind of pilgrimage to come closer to the scientist she admired. Walking in Darwin's footsteps, both literally and metaphorically, Ladygina founded a laboratory of animal psychology under the roof of the Darwin Museum (1913).[222] Here, she spent her career observing, experimenting with, and thinking about animals comparatively – from the chimpanzee "Ioni" [Yoni] (1913-1916), a macaque named "Dezy" [Daisy] (1917-1919), to parrots, dogs, and wolves (1921-1923), and including Ladygina-Kots' very own son, Rudi (born in 1925). To her colleagues in the West, Ladygina was known as Nadie Kohts and is today remembered for likely inventing a research method that soon became standard practice: matching-to-sample (MTS). In her research, she would require the animal to select the same object it had been shown from a number of objects, or a similar one; she thus tested, respectively, the ability to discriminate or to abstract.[223] Although Ladygina spent most of her time studying animals, it was the question of the human that was at the heart of her research. How similar are we to other animals? How do we differ? How do the cognitive abilities of animals, especially non-human primate species, compare to our own – are animals able to reason, are their actions based on insight? Her interests reflected the Darwin Museum's agenda and resonated with Darwinism and Soviet ideology more broadly, which influenced and, at times, constrained Ladygina's work.

Ladygina-Kots' research was indicative of Soviet politics and culture. This chapter argues that Ladygina's assessment of the human-animal divide differed from Darwin's gradualism, which emphasized the continuity between humankind and other species. While clearly inspired by Darwin, Ladygina's work reflected the notion that leaps (saltations, *skachki*) were central to evolution, as well as the anthropocentric and Promethean biases of Soviet culture, especially in its Stalinist iteration. Insisting that

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[220] Klaus Gestwa, *Die Stalinschen Großbauten des Kommunismus: sowjetische Technik und Umweltgeschichte, 1948-1967* (München: R. Oldenbourg Verlag, 2010); on engineers and the problem of the engineer as a hero because of his "outmoded inability to believe in the great leap" of Stalinism, see Harley Balzer, "Engineers: The Rise and Decline of a Social Myth," in *Science and the Soviet Social Order*, ed. by Loren R. Graham (Cambridge: Harvard University Press, 1990), 141-167; for a nuanced account that emphasizes competing "conservative and conservationist" traditions and not only "hyper-rationalism run amok," see Stephen Brain, "The Great Stalin Plan for the Transformation of Nature," *Environmental History* vol. 15 no. 4 (2010), 670-700.

[221] GDM f. 11 op. 1 KP OF 15111/539, quote l. 7.

[222] Ladygina founded the museum when she was still a student at the Higher Courses for Women in Moscow: GDM f. 11. op. 1 ed. KPOF 15111/606, l. 1ff.

[223] Frans de Waal, *Are We Smart Enough to Know how Smart Animals Are?* (New York : W.W. Norton & Company, 2016), 96-98; Jaan Valsiner and Ren van der Veer, *Social Mind: Construction of the Idea* (Cambridge: Cambridge University Press, 2000), 350.

qualitative differences separate humans from other animals, Ladygina inserted her voice in the ongoing debate on the relationship between revolution and evolution, a major ideological concern. As Stalin, insisting on dialectics, put it: "evolution and revolution, quantitative and qualitative changes, are two necessary forms of the same movement."[224]

Darwin's Mistake and Engels' Insight: The Question of Man's Place in Nature

Evaluating her field of study, comparative psychology, Ladygina praised Darwin for having provided a "materialist explanation for the emergence of emotions" and "brilliant descriptions" of their expression in animals of "all levels of development." The physiologist and Nobel laureate Ivan P. Pavlov, too, asserted that the British naturalist had inspired interest in a comparative analysis of animal behavior and psychology across the world. Pavlov shared Darwin's commitment to the continuity of species and once, while caressing an excited lab dog, expressed his puzzlement as to how people could cling to the notion of a qualitative difference separating us humans from other animals.[225] On this specific point, Ladygina begged to differ with both Pavlov and Darwin. Unlike Pavlov, Ladygina would have been in no position to espouse opinions contradicting the official Stalinist stance, insisting on human distinctiveness. Ladygina thus agreed with Darwin only selectively.

In Ladygina's assessment, Darwin was single-mindedly focused on proving the continuity of species. She was critical, for example, of Darwin's interpretation of his dog's suspicious reaction to a parasol moving in a light gust of wind. To Darwin, it meant that the animal treated the object like an intruder and therefore like a subject. In his interpretation, the dog's reaction was akin to belief in "unseen or spiritual agencies" among people. In Ladygina's opinion, ascribing human traits such as a religious sense to non-human species was an instance of unduly anthropomorphizing animals.[226]

And Darwin was not the only one who anthropomorphized animals, according to Ladygina. From George Romanes, a friend and supporter of Darwin late in his life,[227] to Wilhelm von Osten's endeavor in early twentieth-century Germany to teach the horse "Clever Hans" reading, counting, and writing, Ladygina could learn from several "grotesque" exercises in wanting to see the human in animals.[228] The Clever Hans experiment in particular became an internationally renowned textbook example of how *not* to study animals, which Ladygina examined closely as a student.[229] Tapping with his hoof, the horse indicated for example the results of the subtractions and additions he performed. It turned out, however, that Hans gave correct answers only so long as he saw the examiner or any other person who knew the solution to the problems he was to solve.

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[224] N. a., "Darvinizm," *Bol'shaia Sovetskaia Entsiklopediia*, second edition, vol. 13 (1952), 370-378, quote: 373.
[225] Daniel P. Todes, *Ivan Pavlov: A Russian Life in Science* (Oxford: Oxford University Press, 2014), 295.
[226] GDM f. 11 op. 1 ed. KPOF 15111/788, l. 7. Darwin, *Descent*, 65-69.
[227] Joel S. Schwartz, "George John Romanes's Defense of Darwinism: The Correspondence of Charles Darwin and His Chief Disciple," *Journal of the History of Biology* 28, no. 2 (1995), 281-316. http://www.jstor.org/stable/4331351; N. N. Ladygina-Kots, *Issledovanie poznavatel'nykh sposobnostei shimpanze: Chast' I. raspoznavanie tsvetov. Chast' II. otvlechenie tsveta* (Moscow and Petrograd: Gosudarstvennoe izdatel'stvo, 1923), 13f.
[228] GDM f. 11 op. 1 ed. KPOF 542, l. 57.
[229] GDM f. 11. op. 1 ed. KPOF 15111/1875, l. 1.

The horse was clever indeed, but instead of mastering math, he had mastered reading the people examining him and the unintentional cues they gave him.[230] "Clever Hans" had only succeeded in cross-species communication, a crucial ability for a domesticated animal like the horse.[231]

Ladygina was consistently suspicious of anthropomorphism. By the 1950s and 1960s, she sharply contrasted the findings of Soviet science with the conclusions of "some Western scholars" who failed to clearly distinguish between human and non-human species. Here, Ladygina faulted their science while simultaneously observing the classic script of Cold-War narratives, pitting the Soviet Union against the West.[232] Specifically, she polemicized against the Americans Robert Yerkes and Wolfgang Köhler. At least in rhetorical terms, it was a departure from the high hopes in scientific "internationalism" which she had harbored in the 1920s. She had dedicated her book *Contribution to The Problem of 'Labour Processes' of Monkey*s to her partner in correspondence, Robert Yerkes.[233] Yerkes, however, agreed with Köhler, who thought that the apes he experimented with were just as capable of purposeful action as we humans are. They maintained that there was no difference in kind that would distinguish the behavior of chimps from that of people, and Ladygina, as a scholar working in the Soviet Union, could not agree with such a gradualist evaluation of the human-animal connection.[234]

Ladygina was neither the first nor the last to warn of anthropomorphism in animal and comparative psychology. Her senior colleague, the ethologist V. A. Vagner (Wagner, 1849-1934), rejected anthropomorphism and agreed that Darwin himself had succumbed to this pitfall.[235] Indeed, many colleagues in the West were suspicious of it as well. C. Lloyd Morgan (1852-1936) reacted to the humanizing tendencies and anecdotal approach of George Romanes with what became known as the "Morgan Canon." Morgan

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[230] N. a., "A Horse --- and the Wise Men," *The New York Times*, July 23, 1911, http://query.nytimes.com/mem/archive-free/pdf?res=9B05E7DD1131E233A25750C2A9619C946096D6CF; Oskar Pfungst, *Das Pferd des Herrn von Osten (Der Kluge Hans). Ein Beitrag zur experimentellen Tier- und Menschen-Psychologie.* (Leipzig: Verlag von Johann Ambrosius Barth, 1907) https://archive.org/details/daspferddesherr00stumgoog.

[231] Researchers like Frans de Waal argue that the specialized skills and abilities needed in the life of an animal should constitute the benchmark for assessing their cognitive abilities, not our human skills. Their point of departure is the concept of "environment" (Jakob von Uexküll, 1864-1944), according to which all species perceive the world around them in different, subjective ways. See the chapter "Magic Wells," in *Are We Smart Enough*, 7ff.

[232] Ladygina on Yerkes and Koehler, see f. ex. N. N. Ladygina-Kots, *Konstruktivnaia i orudiinaia deiatel-nost- vysshikh obez'ian (shimpanze)* (Moscow: Izdatel'stvo AN SSSR, 1959), 5f; GDM f. 11 op. 1 KP OF 15111/788 l. 11. To focus on Koehler and Yerkes became standard practice among primatologists of Ladygina's generation. See: D. V. Mikhel', *Primaty, uchenye i imperiia: k sotsial'noi istorii issledovanii primatov v Sovetskom Soiuze*
http://www.phil63.ru/primaty-uchenye-i-imperiya-k-sotsialnoi-istorii-issledovanii-primatov-v-sovetskom-soyuze.

[233] N. N. Ladygina-Kots, *Prisposobitel'nye motornye navyki makaka v usloviiakh eksperimenta k voprosu o 'trudovykh protsessakh' nizshikh obez'ian s 24 foto-tablitsami* (Moscow: izdatel'stvo GDM, 1928), 7f.

[234] Wolfgang Koehler, *Intelligenzprüfung an Menschenaffen. Second, revised edition* (Berlin: Julius Springer, 1921); Ladygina on Yerkes and Koehler, see f. ex. N. N. Ladygina-Kots, *Konstruktivnaia i orudiinaia deiatel-nost'*, 5f; GDM f. 11 op. 1 KP OF 15111/788 l. 11.

[235] Nikolai L. Krementsov, "V. A. Wager and the Origin of Russian Ethology," *International Journal of Comparative Psychology* vol. 6 no. 1 (1992), 61-70.

advocated to privilege faculties "'lower on the psychological scale"' in explaining animal behavior. When, for example, his dog Tony found out how to best balance a "heavy-knobbed" walking stick, Morgan was uncomfortable interpreting his terrier's success as an instance of purposeful action based on an abstract understanding of the forces at play. Trial and error over the course of the walk explained Tony's accomplishment, not insight, concluded Morgan.[236]

Morgan's alarm influenced the school of behaviorists that formed in the 1920s. They privileged nurture over nature, emphasizing the influence of environmental conditions and transformative possibilities over inborn capacities. Prominent in the US, researchers like John Watson (1878-1958) strictly limited themselves to studying the observable behaviors and were subsequently slated by their critics for conceptualizing non-human species as "stimulus-response machines."[237] They studied animals in the laboratory, working with mice and other species that typically thrive in such settings.

In marked contrast to the behaviorists, ethologists preferred to work in the field. In (Soviet) Russia, this school enjoyed early prominence with V. A. Vagner (Wagner), but languished after his death in 1934.[238] Ethologists traded their lab coats for cloths suited for mingling with animals in more natural settings. The eminent Austrian advocate for ethology, Konrad Lorenz (1903-1983), who argued for a "holistic contemplation of animals" in which "intuitive understanding" supplemented the scientific approach of systematic data collection, could famously be seen walking in rubber boots through meadows with goslings trailing behind him.[239] Ethologists tended to regard behavior to be much less amenable to change, conceptualizing it as species-specific and adapted to the particular ecosystems each inhabits. In the Soviet Union, the emphasis on nature over nurture that translated for example into research on instinct came under attack from the 1920s onwards. Critics of Wagner questioned the compatibility of his "biopsychological" research with Soviet ideology, and Vagner's student Boris Khotin (1895-1950) was exiled to Central Asia in 1935. Vagner stood accused of "biologicization of [the] mind," a serious allegation, since to "biologize" implied the denial of malleability, a quality essential to the revolution. Ethologists lost their institutional basis as the state expanded its control over science beginning in the late 1920s.[240]

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[236] Morgan's Canon: "In no case may we interpret an action as the outcome of the exercise of a higher psychical faculty, if it can be interpreted as the outcome of the exercise of one which stands lower on the psychological scale." C. Lloyd Morgan, *An Introduction to Comparative Psychology. Second Edition, Revised* (London and Newcastle-on-Tyne: Walter Scott Publishing, 1903), 241f. See also Frans De Waal, *The Ape and the Sushi Master: Cultural Reflections of a Primatologist*, (New York: Basic Books, 2001), 67f.

[237] Todes, *Ivan Pavlov*, 295; De Waal points out that behaviorists withdrew "strategical[ly]" from their initial position that emotions in general, regardless of human or animal, were "mere illusions" and not important for their study of behavior and later held this position up only regarding animals. *Ape and Sushi Master,* 50ff; GDM f. 11 ed. KPOF 15111/542, ll. 67f.

[238] Krementsov, *Wagner*, 64ff. One of Wagner's students who continued research on innate behavior in the 1930s was G. Roginskii. Ibid., 67. In primatology, field research excited the minds of researchers when they learned, in the 1960s, of the work done by Jane Goodall and Diane Fossey. Mikhel, *Primaty*.

[239] De Waal, *Smart Enough Animals*, 40; De Waal, *Ape and Sushi Master*, 39. Konrad Lorenz, *The Foundations of Ethology* (1982); On Lorenz' connections to the Nazis, see Benedikt Föger and Klaus Taschwer, *Die andere Seite des Spiegels: Konrad Lorenz und der Nationalsozialismus* (Wien: Czernin Verlag, 2001).

[240] GDM f. 11 ed. KPOF 15111/542, ll. 67f. De Waal, *The Ape*, p. 51; On Wagner and Soviet ideology, see, "V. A. Wager," 66f; Valsiner, and Ren, *Social Mind*, 357f.

Nadzehda Ladygina-Kots is not so easily pigeonholed and contradictions can be traced in her work. She borrowed methods from behaviorists,[241] but her stated interest early in her career was the psyche of animals, and she often referred to her field of study as "animal psychology" (*zoopsikhologiia*). She did not shy away from terminology that her behaviorist colleagues, who abjured speculations about the animals' emotional state, rejected. Ladygina took her lead from Darwin's *Expression of Emotions*, a book lavishly illustrated with photographs to demonstrate the physical expression of emotional states, such as the "retraction of the corners of [the] mouth" when in a cheerful mood.[242] The face was for Ladygina "the mirror of the mind" (*dusha*).[243] She also employed language that described the chimpanzee Ioni in decidedly humane terms, a choice that was in tension with her thesis of qualitative differences separating us from the rest of the animal kingdom. She deviated from the behaviorists as well as her own criticism of Robert Yerkes and Wolfgang Köhler and described, for example, the actions of little Ioni's – like those of her son Rudi – as guided by intention, such as deceit. "For instance, [Ioni] took some forbidden thing, looking not at it, but at the person who did not allow him to take it," observed Ladygina. "Not seeing the thing himself, he evidently assumed that it also was invisible to others."[244]

The Human-Animal Divide

For Ladygina, the comparison between humans and other primates quickly became the key to demonstrating that humans were qualitatively different from animals. Two considerations motivated her claims. One was the cognitive development of infant primates and human children. Another, quite different, was the problem of labor.

Nadezhda Ladygina-Kots' most extraordinary study examined the physiology and behavior of two children, one human, the other a chimpanzee. How much would their development have in common? *Infant Chimpanzee and Human Child* (1935) provided a direct comparison of the two primate children, each representing their species as a whole.[245] She began her book with comparisons of the physical traits and abilities, noting

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[241] To understand the problem-solving abilities of animals, she used devices like puzzle boxes: How long would it take the female macaque Dezy to open the different kinds of locks with which the box was equipped in order to obtain the enticing treat, some food or freedom? How would the monkey go about the task? In charts and curves, she evaluated her efficiency and ability to learn. This method was borrowed from the American behaviorists, whose dedication to setting up controlled experiments with the aim of producing results that could be tested and repeated she applauded. GDM f. 11 op. 1 ed. KPOF 15111/606, ll. 1ff; GDM f. 11 op. 1 ed. KPOF 15111/718, ll. 1ff; N. N. Ladygina-Kots, *Prisposobitel'nye motornye navyki amakaka v usloviiakh eksperimenta k voprosu o 'trudovykh protsessakh' nizshikh obez'ian s 24 foto-tablitsami* (Moscow: Izdatel'stvo GDM, 1928), 326 (on the puzzle boxes).

[242] Darwin, *Expression*, passim; quote: 210.

[243] N. N. Ladygina-Kohts, *Infant Chimpanzee and Human Child: A Classic 1935 Comparative Study of Ape Emotions and Intelligence*, edited by F. M. de Waal, translated by Boris Vekker and with an introduction by Allen and Beatrix Gardner (Oxford: Oxford University Press, 2002), 10.

[244] Ladygina-Kohts, *Infant Chimpanzee*, 363.

[245] The obvious flaw of Ladygina's comparative study was that her observations were based on two individuals only. Wolfgang Köhler had warned of this limitation already in his 1917 publication on ape intelligence, in which he emphasized the differences between individuals and urged that conclusions for the whole species should never be drawn from studying a single individual: Wolfgang Koehler, *Intelligenzprüfung an Menschenaffen* ([Berlin, Julius Springer, 1921 [1917]), 5.

general similarities, and ended with their intellectual characteristics. Ioni, as the research on play and tool-use showed, outdid Rudi in his passion for destructive play, whereas Rudi's interest in constructing objects out of different elements, such as an airplane out of sticks, was not matched by the ape.[246] In the final point of comparison regarding the two toddlers' abilities to observe, perform abstract comparisons or reach logical conclusions and be imaginative, in short, regarding their "intellectual features," the human boy significantly outperformed the chimpanzee in the eyes of his scholarly mother Ladygina.[247]

The photographs accompanying *Infant Chimpanzee and Human Child*, meanwhile, showed the infants in analogous poses, seemingly making a case in support of Darwin's thesis of the proximity of human and non-human species. Yet Ladygina's conclusion was firmly in line with what, by 1935, had become the official Soviet position on the place of humankind in nature:

> It seemed to me that, if I led the two infants from different sides of this bridge and made them go in each other's direction, then after a prolonged and difficult journey, by all means I would see them in the middle of the bridge with their hands extended to each other and their bodies psychically connected […] at the central and most crucial point – at the boundary of intelligence and a tendency for progress – at a point at which the chasm appeared to have no bottom, my bridge caved in; to my surprise, it was the chimpanzee with his characteristic effusiveness, who fell into the hole formed, leaving his human counterpart way above […].[248]

In the written word, Ladygina thus asserted a deep divide separating humankind from the animal world. Notably, she identified Homo sapiens with "progress," marking certain species as "higher" or "lower." She thus evoked a hierarchy of beings that had been at the heart of the Great Chain of Being. Although Ladygina claimed to not have initially expected such a chasm separating humans from animals, her conclusion from 1935 did not principally depart from her earlier publications. But what was it that set humans apart? *Infant Chimpanzee and Human Child* emphasized "intellectual abilities," yet Ladygina's oeuvre suggested that this was not the only aspect in which the species differed.

As early as 1923, Ladygina framed human identity in terms of "deeds" – "it is our hand that made us, children of nature, the governors of the elements […]."[249] Other primates like the macaque, she determined from her work with monkey Dezy, are

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[246] Ladygina-Kohts, *Infant Chimpanzee*, 378f.

[247] Ladygina heavily emphasized the human child's ability to speak in words that convey the complexity of his mind, while she acknowledges that we do not have the same access to the inner world of the chimpanzee. Ladygina-Kohts, *Infant Chimpanzee*, 379f. Darwin had included observations on his own children and commented upon them in *The Expression of Emotions*, and subsequent researchers had followed suit. Two years before Ladygina published her own magnum opus that featured her son Rudi, Luella and Winthrop Kellogg published their experiment with chimpanzee girl Gua and son Donald in America (1933). *The Ape and the Child: A Study of Environmental Influence upon Early Behvior* (New York: Hafner Publishing Company, 1967 [1933]).

[248] Ladygina-Kohts, *Infant Chimpanzee*, 398.

[249] Ladygina, *Prisoposobitel'nye motornye navyki*, 9.

"incapable of work."[250] Work as the defining trait of humankind correlated with the ideology of the Soviet state. According to Marxism, the relationship to the means of production determines the class identity of an individual, and one's class background determined how one fared in the new Soviet society.[251] At the time Ladygina was publishing her research on the macaque Dezy, in the early 1920s, a working class background would have granted, for example, privileged access to education. Although it is unclear whether Ladygina supported these policies, the category of labor played an important role in her assessment of the capacities of animals. Her close observation of how many "futile" movements Dezy performed in her efforts to unlock the puzzle box showed more than just how the monkey went about her task, via trial and error. While Ladygina did not draw an explicit parallel, the attention she paid to "efficiency" evokes Tailorism, popular in Soviet Russia, where in 1920 the poet Aleksei Gastev founded a Central Institute of Labor in Moscow to study the "scientific organization of labor."[252]

Another factor drawing Ladygina's attention to labor was the publication, in 1927, of Frederick Engels' unfinished essay "The Part Played by Labor in the Transition from Ape to Man" in Russian translation. This essay provided what became the obligatory reference to a key Marxist thinker when it came to the evolution of humankind.[253] Writing in 1876, Engels endorsed the argument that bipedalism freed our ancestors to use their hands and that it was the use of tools that distinguished our species. The use of tools caused the bodies of our distant ancestors to gradually evolve, particularly the hands, enabling them to perform increasingly sophisticated tasks; the fruit of their work (such as eating meat) in turn shaped our ancestors' bodies. Rather than emphasizing the brain as the origin of the process of becoming human, Engels underscored that it was labor that drove anthropogenesis. Work also encouraged people to cooperate and thus strengthened social bonds, leading to the development of language. Without using tools, asserted Engels, we would have never been able to embark on the process of acquiring "mastery over nature."[254] What followed from his definition of humankind as *homo faber* (Man the Maker) was the conclusion that we, as creatures striving to shape our environment in a

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[250] Ladygina, *Prisoposobitel'nye motornye navyki*, 351f.

[251] On the ways in which practice diverged from theory, see Sheila Fitzpatrick, "Ascribing Class: The Construction of Social Identity in Soviet Russia," *The Journal of Modern History* vol. 65, no. 4 (1993), 745-770.

[252] Ladygina, *Prisoposobitel'nye motornye navyki*, passim; Gastev's institute did not survive the purges of the 1930s: Kendall E. Bailes, "Alexei Gastev and the Soviet Controversy over Taylorism, 1918-24," *Soviet Studies* vol. 29, no. 3 (1977), 373-94. http://www.jstor.org/stable/150306.

[253] Todes, *Ivan Pavlov*, 489.

[254] "Die mit der Ausbildung der Hand, mit der Arbeit, beginnenden Herrschaft über die Natur erweiterte bei jedem neuen Fortschritt den Gesichtskreis des Menschen." ["Mastery over nature began with the development of the hand, with labor, and widened man's horizon at every new advance."] Karl Marx and Friedrich Engels, *Werke: Volume 20* (= *Anti-Dühring, Dialektik der* Natur) (Berlin: Dietz Verlag, 1990 [1962]), 444-455, quote: 446 [translation: https://www.marxists.org/archive/marx/works/1876/part-played-labour/index.htm]; GDM f. 11 op. 1 ed. KP OF 15111/788, l. 15; See the insightful discussion of Engels in Sigrid Schmalzer, *The People's Peking Man: Popular Science and Human Identity in Twentieth-Century China* (Chicago: University of Chicago Press, 2008), 89-93. In contrast to Engels, the "Western" author Kenneth P. Oakley (*Man the Toolmaker,* 1959) stressed that "the overarching concept linking tool manufacture and language was culture [with "the development of the brain [having] preceded tool use"], while for Engels and his followers in socialist countries it was labor [and it was the development of the hand that enabled tool making]." Ibid., 89f.

premeditated fashion and according to our perceived needs, are no longer a simple part of nature.[255]

To bolster their theory of human uniqueness, Soviet researchers disputed that other animals could wield tools the same way humans do and possess the cognitive abilities to perform tasks, like we do, in a "planned" or deliberate way. As Engels had emphasized, the further humankind developed, the more goal-oriented and planned became our species' activities.[256]

Ladygina explored the problem-solving abilities of monkeys already in her earliest publications (1923). She continued this line of research further, resulting in books that made increasingly overt references to Marxism, especially to Engels' essay on anthropogenesis. From 1945-1950, she worked with the chimpanzee Paris in the Moscow zoo. This adult male could wield ready-made tools with ease; he was even able to pick the appropriate tool from a selection of instruments at his disposal; what is more, he went about manipulating an object to render it suitable for the task at hand, although he was less apt at *constructing* a tool, such as by forging one long stick out of smaller ones. Yet Ladygina concluded that the relationship of apes to tools is qualitatively different from the one we people entertain to our cherished instruments, as exemplified for example in the tendency she observed in Paris to discard and destroy tools, even if they had proven useful in the past. The species seemed in her opinion also incapable of abstraction, that is of analyzing why a tool had been useful in one instance and apply this insight in a different situation. It seemed to her that the thought-process of chimps was fundamentally different, incapable of "recognizing relations of cause-and effect." Only humans possessed this skill.[257] Ladygina was not alone in pursuing this line of research. Working in the 1930s with the chimp Rafael in Pavlov's laboratory in Koltushi outside of Leningrad, E. G. Vatsuro (1907-1967) was interested whether his research object could fabricate one tool out of several components. Eventually, chimpanzee Rafael succeeded, but it was "unintentionally," and, even though he now possessed the adequate tool, he did not immediately use it to secure the bait. Such an account contradicted Wolfgang Köhler's thesis that the chimps' usage of tools was guided by insight.[258]

The distinctive nature of humankind hinged upon the use of tools and labor, the cognitive ability to preconceive and plan actions. What was at stake in supporting this position was also the question whether evolution could be reconciled with revolution, as Ladygina pointed out in 1962, at the very end of her career: If the differences between human and non-human species was too great to maintain Darwin's disregard for "dialectical leaps," then Darwin must have erred in his insistence on gradualism that was in tension with the Bolshevik understanding of development via revolutions.[259] The

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[255] Karl Marx and Friedrich Engels, *Werke: Volume*, 444-455; GDM f. 11 op. 1 ed. KP OF 15111/788, l. 15.
[256] Ladygina, *Konstruktivnaia i orudiinaia deiatel'nost'*, 309.
[257] GDM f. 11 op. 1 KPOF 15111/788, 11-14.
[258] GDM f. 11 op. 1 ed. KPOF 15111/788, ll. 9-11; Todes, *Ivan Pavlov*, 565ff (on Pavlov's rejection of and preoccupation with Köhler) 295ff (on the differences between Pavlov and American behaviorists).
[259] GDM f. 11 op. 1 ed. KP OF 15111/788, l. 15; N. N. Ladygina-Kots, *Predposylki chelovecheskogo myshleniia: (podrazhatel'noe konstruirovanie obez'ianoj i det'mi)* (Moscow: Nauka, 1965), 5; Engels stressed the qualitative differences of the "psychological abilities of humankind and animals, even the cognition [vospriiatie] of humans was "more complete," according to Ladygina, *konstruktivnaia deiatel'nosti',* 4.

"existence of a qualitative transition from the animal state to the human" pointed in this direction, according to Ladygina.[260] It was Engels who provided the groundbreaking insight that, as fundamentally *social* beings due to the ability to yield tools and perform labor, humans, unlike all other species, cannot be studied by the biologist alone and should be regarded as separate from nature.[261]

Pan Faber? Homo Faber?

By the 1960s, the opinion on labor and the human-animal divide that Ladygina and her colleagues put forth was well accepted in the Soviet Union. However, right around the time of her death in 1963, the established opinion was about to be shaken due to the discoveries of one British primatologist in particular whose research attracted international attention, including in the Soviet Union. Anthropologist Louis Leakey, whose excavations were fundamental for establishing the out-of-Africa thesis regarding human evolution, encouraged a young woman without a formal university education to embark on fieldwork in Gombe Stream National Park in Tanganyika. Ready to crawl through thick undergrowth, Jane Goodall began in 1960 what turned out to be a very long research project on chimpanzees (*pan troglodytes*) in their natural environment. Camping in a tent on a lakeshore in a foreign land, she spent her days from dusk to dawn patiently making her way through dense vegetation in an effort to observe the shy animals. Three months into her research, Goodall witnessed something exciting. "I stopped when I saw a dark shape and a slight movement in the long grass about forty yards ahead. […] I moved a little, so I could see him better." She was watching the animal

> sitting on the red-earth mound of a termite nest, repeatedly pushing a grass stem into a hole. After a moment [the chimpanzee "David Graybeard"] would withdraw it, carefully, and pick something off with his mouth. Occasionally he picked a new piece of grass and used that. When he left I went over to the termite heap. […] I tried doing as he had done, and when I pulled out my grass termites were clinging to it with their jaws.[262]

This chimpanzee, in other words, had used a tool. In fact, Goodall could not only repeatedly observe the "tool-using behavior" but also how the animals picked "a small leafy twig […] and then stripped [it] of its leaves. That was object modification – the crude beginning of tool*making*."[263] Louis Leakey's response to the discovery of *Pan faber*, or chimpanzee the maker, in wild nature was as excited as it was prescient. "'Ah!'" He telegraphed his protégé in response to the news, "'We must redefine man, redefine tool, or accept chimpanzees as human!'"[264] The backlash was not merely from the Soviet side. "My observations at Gombe challenged human uniqueness, and whenever that

[260] N. N. Ladygina-Kots, Konstruktivnaia i orudiinaia deiatel'nost', 3.
[261] GDM f. 11 op. 1 ed. KP OF 15111/788, l. 15; N. N. Ladygina-Kots, *Predposylki*, 5.
[262] Goodall, *Reason for Hope*, 66.
[263] Goodall, *Reason for Hope*, 66f. Emphasis i. o.
[264] Goodall, *Reason for Hope*, 67.

happens there is always a violent scientific and theological uproar," remembers Goodall.[265]

Louis Leakey's telegram accurately described the stages of the Soviet reaction, and the first was to dispute whether what Goodall had witnessed was indeed the use of tools. Selections of Goodall's book *My Friends, the Chimpanzees* were made available to Soviet audiences in the popular journal *Knowledge–Power* (*znanie-sila*) in 1972. One accompanying photograph depicted a chimp harvesting termites, with the grass stem used for dipping for insects between its lips.[266] Only two years later, a translation of her 1971 book *In the Shadow of Man* appeared in Russian. In the foreword, Moscow University's anthropologist M. F. Nesturkh insisted that it would be impossible to agree "with the author's opinion that it has become necessary to redefine what it means to be human." Nesturkh contended that Goodall's observations simply show that the apes have adapted to their environment, whereas the "basic criterion of labor" requires the "use of an intermediary tool, that is the creation of a tool by shaping it with the help of another [tool]."[267]

In the same year 1974 in which Nesturkh insisted that there was only one tool-using species and this was *homo faber*, a book was published in Moscow that relinquished this orthodox position. The book was controversial and its publication possible only posthumously and with de-Stalinization. The respected historian of France and passionate Yeti researcher, B. F. Porshnev (1905-1972), suggested in *On the Beginning of Human History (The Problems of Paleopsychology*) that the defining moment of human nature and evolution were expressions of our intelligence, such as speech, and not labor and the tools with which we alter the environment. He thus departed from the oft-repeated argument of Engels in *The Part Played by Labor in the Transition from Ape to Man*.[268] Just as Leakey had predicted, Goodall's research caused scholars who insisted that we humans are apart from the rest of nature to re-define tools and, eventually, to redefine the nature of humankind.

Nadezhda Nikolaevna Ladygina-Kots, a Woman in Science

The history of primatology is ripe with influential women – among them Jane Goodall, Birute Galdikas, Dian Fossey, Francine "Penny" Patterson, Sarah Hrdy. They have made science more feminine in more ways than one, with a marked increase of attention paid to the problem of females in primate societies since the 1970s, an interest that intersected with second-wave feminism. Unlike the feminist primatologists of the 1970s, such as the work of the American Sarah Hrdy, Ladygina's research did not explore gender relations

[265] Goodall, *Reason for Hope*, 67.
[266] Dzhein Gudoll, "Moi druz'ia – dikie chimpanze," *Znanie-sila* no. 5 (1972), 127-130, for this specific photographs, see 128. Further installments were published in *Znanie-sila* no. 6 (1972), 50-52, and a final one in *Znanie-sila* no. 8 (1972), 30-32.
[267] Dzhein van Lavik-Gudoll, *V teni cheloveka* (Moscow: Mir, 1974) https://coollib.com/b/262737/ D. V. Mikhel' notes that Dian Fossey's and Jane Goodall's popularity in the Soviet Union was in part a result of their support for decolonization. Mikhel', *Primaty, uchenye i imperiia*.
[268] Mikhel', *Primaty, uchenye i imperiia*.

in other primate societies.[269] Nevertheless, a discussion of her research is incomplete without taking her gender into account.

That Nadezhda Ladygina as a woman was able to pursue a scholarly career was the result of the efforts of the pre-revolutionary Russian feminist movement as well as those of the Bolshevik revolutionaries to emancipate women and to enhance their opportunities. As Lenin announced, "the proletariat cannot achieve full freedom without winning full freedom for women."[270] With the October Revolution of 1917, the Bolsheviks set out to fight illiteracy and decreed as early as 1918 that gender should not determine access to educational institutions.[271] Ladygina's career demonstrated the advances women made in science and academia in Late Imperial and Soviet Russia. She began her career as a student at the Higher Courses for Women in Moscow, an institution dedicated to advancing women's education with a history that dated back to 1872.[272] At the Higher Courses, Ladygina founded and headed the Darwin Museum's laboratory of animal psychology. She later became a member of the Moscow Society of Psychology's section on animal psychology, an honorary member of the Moscow Society of Naturalists (MOIP), and earned a doctorate in biology. Certainly most prestigious among her titles was that of being a senior affiliate (*starshchii nauchnyi sotrudnik*) of the Soviet Academy of Science's Institute of Philosophy.[273] Statistics put Ladygina's career in perspective. By the late 1930s, the percentage of women at institutions of higher education accounted for 36% of the faculty.[274] Women did not reach parity, however. In 1961, they made up 37% of the "scientific workers" in the Soviet Union and 27% of Ph.Ds ("candidates of

[269] In *The Langurs of Abu* (1977), for example, Sarah Hrdy portrayed female primates as agents in their societies, rather than objects of male domination. For a detailed discussion of the politics of primatology and women in the discipline, see Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989).

[270] V. I. Lenin quoted in: Central Statistical Board of the USSR Council of Ministers, *Women and Children in the USSR: Brief Statistical Returns* (Moscow: Foreign Languages Publishing House, 1963), 13.

[271] Illiteracy among men and women was under attack since the end of the Civil War and became part of Stalin's First Five Year Plan (1928-1932), since it had, in spite of remarkable progress, not yet been eradicated: Dodge, *Women*, 142. On women in science and the continued difficulties they encountered: Evgeniia Vedernikova, "Sovetskaia gendernaia politika i kar'ernye vozmozhnosti zhenshchin v nauke," *Zeitschrift für interkulturelle Frauenalltagsforschung* (2003), 2. http://ecsocman.hse.ru/rubezh/msg/18347421.html (last accessed April 8 2017); Valkova,. "The Conquest of Science."

[272] Ladygina had originally intended to enroll into the medical sciences, but was admitted to study the natural sciences. GDM f. 11 op. 1 ed. KP OF 11137/257, ll. 51-54. The Tsarist government, fearing student radicalism, forced it to close in the 1880s. Women who sought emancipation through education, a strong emphasis of the Russian feminist movement, could (for over a decade) study only in Saint Petersburg. It took until 1900 for the Higher Courses in Moscow to welcome new students, provided the women obtained the necessary approval from the police. Anyone suspected of being a revolutionary was weeded out. After the revolution of 1905/06 the authorities allowed Higher Courses for Women in other cities to open or reopen, and the number of women enrolled rose to 25,000 by 1914. Central Historical Archive of Moscow TsIAM f. 363 op. 1 d. 55, ll. 1, 1ob; TsIAM f. 363 op. 1 d. 27, f.ex. ll. 8f. Richard Stites, *The Women's Liberation Movement in Russia*: Feminism, Nihilism, and Bolshevism, 1860-1930 (Princeton: Princeton University Press, 1990). On education, see especially 50ff; 167ff.

[273] GDM f. 11 op. 1 ed. KPOF 15111/2200, ll1f.

[274] Barbara Evans Clements, *A History of Women in Russia: From Earliest Times to the Present* (Bloomington: Indiana University Press, 2012), 213. According to Clements, women in the American workforce with "professional and technical jobs in the late 1930s" accounted for only 14%. See: Ibid.

science").[275] While not unique, Ladygina's success as a comparative psychologist of international reputation was remarkable.

Ladygina's professional life spanned more than the first half of the Soviet Union's existence, a time in which women who pursued a career still faced, in spite of new opportunities, the challenge of reconciling their ambitions and identities with the demands placed upon them as wives and mothers.[276] For Ladygina, however, the two roles also converged in a productive way: she took advantage of the birth of her first and only child for research purposes. Born in 1925, she observed Rudi for four years and included the insights gained as well as many photographs depicting her son in her most famous work, the 1935 monograph *Infant Chimpanzee and Human Child*. In deriving empirical material from her own offspring, Ladygina was by far not alone, and male colleagues shared the practice also. Darwin, too, had derived empirical material from his own children, in addition to soliciting the expertise of mothers,[277] as did later psychologists, such as Ladygina's contemporary and colleague in Moscow, Lev Vygotskii (1896-1934). Vygotskii built labyrinths in his home to recreate Wolfang Köhler's experiments on the ability of apes to solve problems, with the difference that it was his children who were enticed to solve the problem of how to obtain the treat (a tangerine), rather than apes.[278] Although Ladygina – or women, for that matter – were surely not unique in having access to children to observe and conduct experiments with, including their own biological children, being a woman made, in her opinion, still a difference.

It seems that Ladygina endorsed the notion that she, as a woman, entertained a special bond with children (of all primate species), and they with her. She understood the connection to be the result of her instincts as a woman, and thus a question of biology. "Not surprisingly," claimed Ladygina with reference to her research object, the infant

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[275] These are the numbers provided by the Central Statistical Board of the USSR Council of Ministers, *Women and Children in the USSR*, 17.

[276] During the New Economic Policy (1921-28), the Soviet state supported the idea of institutionalized childcare with the aim of breaking up the family as an institution that would pass on its "bourgeois" values to the new generation, and of enabling women to join the workforce: Richard Stites, *Revolutionary Dreams: Utopian Vision and Experimental Life in the Russian Revolution* (New York: Oxford University Press, 1989), 32. At the end of the day, scholars have argued, the Bolshevik government nevertheless prioritized spending money on developing the economy in more direct ways: Clements, *A History*, 195. By the 1930s, Stalinist culture reevaluated the domestic sphere, celebrated women as mothers and conceptualized the family as a building block of socialism: Clements, *A* History, 211ff. While some authors frame the gender and family policies of the 1930s as part of a "Great Retreat" (N. Timasheff) from revolutionary values (Stites, *Revolutionary Dreams*), others stress the continuities and point out parallels to the pro-natalist policies elsewhere, f. ex., in Germany. By far not everyone wanted to do away with the family during the Civil War and NEP, and the re-evaluation of policies in the 1930s was by no means a return to the policies and norms of Tsarist Russia, maintains David L. Hoffmann, *Stalinist Values: The Cultural Norms of Soviet Modernity, 1917-1941* (Ithaca: Cornell University Press, 2003), 88ff. For a pessimistic evaluation of the opportunities that resulted form Soviet gender politics for women in science, see Vedernikova, "Sovetskaia gendernaia politika."

[277] Charles Darwin, "A Biographical Sketch of an Infant," *Mind* vol. 2, no. 7 (1877), 285-94 http://www.jstor.org/stable/2246907; https://www.darwinproject.ac.uk/people/about-darwin/family-life/darwin-s-observations-his-children. He wrote for example to his colleague and advocate Thomas Henry Huxley to kindly ask his wife, Henrietta, whether she would share notes on her children's behavior with him. This reflected the way Darwin conducted research, asking for the expertise of a wide-cast net of correspondence – and the eminent biologist clearly assumed that Henrietta as a woman who took care of her offspring possessed expertise on children; Browne, "Darwin and the Expression," 307.

[278] Valsiner, and van der Veer, *Social Mind*, 361.

chimpanzee Ioni, "the chimpanzee is more inclined to communicate with women than with men because women, with their maternal instinct, better understand and fulfill his infantile demands." When she bought Ioni from a store in Moscow in 1913, she noted how attached the animal had been to the woman who ran the company, even though she had been handling the baby for only one week. Once Ladygina had the chimpanzee successfully transported to the Darwin Museum and her laboratory – which proved to be a nerve-wracking endeavor against which the young creature protested with all its might – he chose her as his new protector. "[R]ight after we opened his cage, [he] rushed over to me and hung on my neck in the same manner as he did with his previous owner […] so strongly that you could hardly believe that he had [… bitten me…] just 1 hour ago."[279]

For Ladygina, managing the dual role as (surrogate) mother and researcher was not always seamless. With apparently conflicting feelings, Ladygina acknowledged how she, in her role as a scientist who observed the children in her care, failed to satisfy their emotional needs. She noted how it was "with gloom and sadness" that the "brown" and "greenish gray" eyes of the two infants looked at her as soon as she engaged them in her role as a scholar at work. "For both [Rudi and Ioni], I was the closest and most desired person," Ladygina remarked. "[I]t was me with whom they so joyfully played. And now I seemed to be brushing them aside, sitting motionlessly and writing for long periods of time. I feel and I see how both of them were trying by any means to make me forget for a moment about science and to remind me that they were real, live children."[280] While she did not comment on this challenge overtly, it is apparent that the relationship between her and not just her son, but also the chimpanzee Ioni, which Ladygina explained with her womanhood, sensitized her towards the ethical problems of entertaining a research laboratory with living experimental animals.

If helping women advance in science and education was part of the Bolshevik revolutionary project, then Ladygina, who built a successful scholarly career, was at the forefront of this development. What is more, she struggled in her research – which included observations of her own child – with her dual role as caregiver on the one hand and scientist on the other, making her womanhood central to her work, even if Ladygina did not consider herself an overtly feminist researcher.

Conclusion

Unlike the Darwin-inspired sculpture on Lenin's desk might suggest, Soviet researchers like Nadezhda Ladygina-Kots faced a difficult task when they strove to reconcile Darwinism with Soviet ideology and insisted on the qualitatively difference between humankind and animals. As Ladygina concluded in 1959, the centenary of the publication of the *Origin of Species*: "Darwin," had "arrived at the wrong conclusion" when he emphasized evolution at the expense of revolution and insisted that the "'difference in intelligence between humankind and the higher animals, […] is only quantitative, not qualitative'."[281]

That a qualitative difference separates humankind from non-human species became the compulsory view in the Soviet Union by the late 1920s. Engels' essay on

[279] Ladygina-Kohts, *Infant Chimpanzee*, 115f.
[280] Ladygina-Kohts, *Infant Chimpanzee*, 8.
[281] N. N. Ladygina-Kots, *Konstruktivnaia i orudiinaia deiatel'nost'*, 3.

anthropogenesis argued that labor drove human evolution and singled out the ability to use tools as the defining feature of humankind (*homo faber*, Man the Maker). It provided scholars working in the Soviet Union, like Nadezhda Ladygina-Kots, with a key Marxist authority to reference in their scientific work. Ladygina's research was in lockstep with the official Soviet views, which certainly influenced her research agenda. Nevertheless, her magnum opus, *Infant Chimpanzee and Human Child* (1935) also contained evidence that subverted Ladygina's thesis of a chasm separating humankind from the animal world. The photographs that illustrate the book depict the human and ape toddlers in analogous poses, making a visual argument for the commonalities shared by both species. Yet what set humankind apart, according to Ladygina, was the mind, in addition to the ability to labor, defined as tool use and manipulation of the environment in a goal-oriented fashion. According to this definition, humankind is a social species distinct from and striving to lord over nature. Around the time of Nadezhda Ladygina-Kots' death in 1963, this consensus was shattered. Translated into Russian and printed in Soviet journals, the work of another woman primatologist, namely Jane Goodall's discovery of chimpanzees using and manufacturing tools in the wild, provoked renewed uncertainty regarding the unique nature of the human identity as *homo faber*.

Chapter 4: Living Fossils? Darwinism, the Missing Link, and the Soviet Search for the Yeti

Bordering on the Himalayas, the Tian Shan, and the Hindu Kush, the summits of the Pamirs with their glaciers rise high into the sky, earning the mountain range its nickname the "roof of the world." The glaciers offer a dazzling visual counterpoint to the barren slopes and rich pastures that feed the livestock that graze here during the summer. Divided between today's Afghanistan, Pakistan, China and Tajikistan, the Pamirs formed a stretch of the Soviet Union's southern border. The peaks on the Soviet side had been named after the Union's leaders and loftiest aims – Lenin and Stalin, the latter renamed "Communism Peak" with de-Stalinization.[282] Throughout the twentieth century, mountaineers and researchers alike set out on the arduous trek to the Pamirs' sparsely populated elevated plateaus, glaciers, and peaks to catalogue the resources, flora, and fauna, filling in the remaining blank spots on the Soviet Union's map. To know the precise geography of the Pamirs as a border region was of great military importance, and the discovery of gold and other important mineral resources in the context of expeditions led by the Academy of Sciences starting in 1928 held out economic promise.[283]

Despite the crucial strategic importance of the region to the Soviet Union, interest in the Pamirs in the middle decades of the twentieth century was aroused by a very different problem. Renowned scientists and newspaper readers alike, both within Soviet borders and far beyond, were excited by the news that an unusual creature had been sighted in the mountain range. It was of no apparent utilitarian, but potentially high scientific, value provided the scientific community accepted the beast's veracity. Reports of the creature, known as the Yeti in Asia and Sasquatch or Bigfoot in North America, posed a "philosophical challenge" according to Soviet researchers because of its status as "a being that physically closely resembles humans, but at the same time definitely is an animal."[284] One local Tajik reported in 1933 to geologist V. I. Sobolevskii that he had once encountered such a (m)animal in the Pamirs. He had ventured out with his hunting equipment when all of a sudden he noticed two "apes – one female and one male –" targeting him with stones from a higher elevation. Whether out of anger or self-defense against the aggressors, the Tajik shot the male with his arrow and bow. Screaming, the female escaped and hid from him, so he returned home with the body of the male, wondering upon closer examination whom or what he had slain. Were the two stone-throwing creatures apes or people? If neither, were they more apelike or more like

[282] On the history of the Pamirs and the ecological and social impact of the changing political regimes upon the region, see Hermann Kreutzmann, "Historical Geography of the Pamirs," in *Oxford Research Encyclopedia of Asian History* (Oxford: Oxford University Press, 2016) 10.1093/acrefore/9780190277727.013.46 (June 2018).

[283] Already Tsarist Russia pursued the geological exploration of Turkestan, the general gouvernement in which the Pamirs were located, shortly after its integration into the empire in 1865. Soviet exploration in the late 1920s and early 1930s also involved the geological training of local residents, some of whom went on to become geologists. Sh. K. Rakhimova, "Istoriia organizatsii geologicheskoi ekspeditsii v tadzhikistane," *Nomai donishkokh/uchenye zapiski/scientific notes* 51 no. 2 (2017), 37–41. https://cyberleninka.ru/article/v/istoriya-organizatsii-geologogicheskoy-ekspeditsii-v-tadzhikistane

[284] B. F. Porshnev, *Sovremennoe sostoianie voprosa o reliktovykh gominidakh* (Moskva: VINITI, 1963), 348.

humans? Before he buried the strange corpse underneath a rock that he pointed out to Sobolevskii, the Tajik hunter felt compelled to consult with an official from the next settlement. As this chapter uncovers, researchers in Soviet Union, and the world over, puzzled over the same questions as the Tajik hunter did.[285]

The Tajik's story of an encounter with a human-like ape-creature was not unusual in reports from more or less remote wildernesses in the middle of the twentieth century. In 1955, while hunting on a sunny day in a forest in British Columbia, the Canadian William Roe faced what he thought was a Sasquatch, the hairy creature known from Native American folklore. His first reaction was to aim his rifle. "The thought came to me," he remembered, "that if I shot it I would have a specimen of great interest to scientists the world over." Upon second thought, however, he hesitated. "Although I called the creature 'it,' I felt now that it was a human being and I knew I would never forgive myself if I killed it."[286] Stories of humanlike beings in the forests of California, Canada, and the high elevations of the Himalayan and Pamir mountain ranges drew men and women from the UK, the US, and the Soviet Union to embark on strenuous expeditions to unlock nature's final secrets and track down these "hidden animals," or cryptids. "The great days of zoology are not done," announced Belgian researcher Bernard Heuvelman, pointing out that many species of the animal and plant kingdoms still await discovery.[287] Ivan T. Sanderson, a Scottish-born American biologist who wrote for a popular audience and was highly critical of the scientific establishment, contended in 1961 that earlier reports of this creature went unheeded as a result of the West's "complacent[…] [certainty] that it knew more or less everything about all countries."[288] Once interest in the humanlike cryptids caught on they became known under a variety of names, including Yeti, Abominable Snowman, or Almasty.

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[285] Archive of the Academy of Sciences (henceforth: ARAN) ARAN f. 2 op. 6 d. 268, l. 221. Notably, Sobolevskii had been shown the location of the corpse yet failed to further investigate the skeleton that purportedly lay underneath the rock. This lack of investigative rigor prompted the scientists assembled at the 1958 meeting of the Academy of Sciences, at which they discussed the problem of the snowman, question as to whether Sobolevskii's account could be trusted. ARAN f. 2 op. 6 d. 268, l. 258.

[286] Ivan T. Sanderson, "A New Look at America's mystery giant," *True: the Man's Magazine* (March 1960), 44 and 101f. and 115. Quote: Ibid., 102. Whether or not it was necessary to shoot mysterious animals upon encountering them to convince the world that they exist and thus ensure the creature's protection and ultimate survival was a matter of controversy – Soviet researcher D. Baianov disagreed on the matter with his American colleague, the physical anthropologist Grover Krantz. Krantz argued that a specimen of Bigfoot needed to be collected to prove its existence. Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, "Russian Letters," Letter Baianov and Roderick Sprague, Head, Department of Sociology/Anthropology, University of Idaho, Moscow, Idaho (July 10 1976), 3.

[287] See Bernard Heuvelman's *On the Tracks of Unknown Animals*, trans. Richard Garnett (New York: Hill and Wang, 1958) (*Sur la Piste des Bêtes Ignorées*, orig. French 1955), which was well received by Soviet snowman researchers. See the review "Tainy nevedomykh mirov," *Iunyi Tekhnik* no 3 (1956), 75-77, a copy of which is located in the archive of the State Darwin Museum (henceforth: GDM) GDM f. 11 op. 1 ed. 1906 (KPOF 1511/1906), ll. 4-7. B. F. Porshnev referenced Heuvelman and, like his Belgian colleague, made the case at the January 1958 meeting at the Presidium of the Soviet Academy of Sciences that the discoveries of animals thought to be extinct or known only from the accounts of local populations justify the search for purportedly existing creatures like the Yeti. ARAN f. 2 op. 6 d. 268, l. 218.

[288] Ivan T. Sanderson, *Abominable Snowmen: Legend Come to Life: The Story of Sub-Humans on Five Continents from the Early Ice Age Until Today* (Philadelphia: Chilton, 1961; New York: Cosimo Classics, 2007), 2f.

Like other animals, Yetis seemed to roam across political boundaries and their pursuit became an international affair. The research even took on a geopolitical character at times, with Cold War competition dominating the rhetoric up to the late 1950s, followed by increased cooperation and exchange of expertise across the Iron Curtain.[289] The American Bigfoot/Sasquatch community and their Russian peers regularly exchanged letters – Igor Burtsev and Dmitrii Baianov were the two most prominent and dedicated letter writers.[290] Highlights of the cooperation, which coincided with the general relaxation of tensions between the US and the Soviet Union, known as détente, were the visits by American Yeti scholars: The Swiss-born Canadian René Dahinden, a legend among Sasquatch hunters, visited Moscow in 1971. He screened video footage of Bigfoot, the controversial 1967 Patterson-Gimlin film to which he had bought the rights. Dahinden, generally known as irritable and for his colorful vocabulary, warned Washington University's anthropologist Grover Krantz to not trust "the Russians." In spite of the warning, Krantz exchanged many letters and visited his Soviet colleagues in 1973 and the early 1980s.[291]

Scholars and self-declared experts on both sides of the Iron Curtain pursued the search for the humanlike cryptids during the Cold War – on the Soviet side particularly from the late 1950s onwards. The Yeti reserachers were often considered curiosities themselves. Yet their story is not simply the account of fringe, amateur scientists chasing shadows and myths, and not just because the Soviet Academy of Sciences officially supported the search for the Yeti in 1958. It is, in fact, a chapter in the scientific effort to apply Darwinian evolutionary theory to practical research. Involving mainstream Soviet scientists as well as amateurs, the search for the Yeti as a 'missing link' reveals new facets of debates on anthropogenesis, and especially the question what distinguishes humankind from even such close relatives as the Yeti, understood as a surviving fossil of human evolution.

Soviet Yeti researchers affirmed the notion of distance between humans and animals, yet they ultimately challenged the Promethean narrative of humankind's ability to take control over the natural world that was so characteristic of Soviet ideology, especially in its Stalinist iteration.[292] With a bow to Friedrich Engels, the generation of

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[289] In the late 1950s, the rhetoric on both sides was one of competition: American Philosophical Society, Ivan T. Sanderson Papers 'The Abominable Snowman," folder # 1, p. 15. The manuscript was published as "The Abominable Snowman," *Fantastic Universe* II no. 6 (October 1959), 58-64; ARAN f. 2 op. 6 d. 268, l. 262.

[290] Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 "Russian Letters."

[291] On Dahinden's and Krantz's visits to Moscow, see: Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0346 "Bayanov" - Letter Baianov to Krantz (February 14 1982); Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 "Russian Letters," passim. See also Regal, *Searching for* Sasquatch, 179. Dahinden remained suspicious of "the Russians" and warned Krantz to remain careful – but he seems to have been generally suspicious, hotheaded, and colorful in his accusations against colleagues. See: Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0342 "More Dahinden" - Letter Dahinden to Krantz, dated April 6 1982.

[292] David Moon's review article on Russian and Soviet environmental history cautions to not reduce the Soviet relationship to nature to Prometheanism, and, while acknowledging the ecological damage that occurred in the largest state of the world especially during the Soviet period, the author emphatically questions the narrative of Russian exceptionalism: David Moon, "The Curious Case of the Marginalization

scholars working under Stalin had argued that humankind achieved freedom from the dictates of the environment with the help of tools, or labor.[293] This conceptualization of humankind as *homo faber* had tangible consequences. As environmental historians have shown, it found its expression in ambitious projects to transform the natural world according to the perceived needs of Soviet civilization, including dams and large-scale irrigation projects.[294] Stalinist consensus gave way during the Thaw to a new understanding of humankind that centered on language instead of labor, and Yeti researchers were key in promoting this shift in paradigm. Expeditions took Yeti researchers into what seemed to them untamed wilderness within the borders of the Soviet Union, further undercutting the Promethean narrative of nature's conquest. Not only was the Yeti said to live in regions not penetrated by the presence of humans; the fact that the (m)animal persistently eluded scientists underscored that mastery over nature was at best incomplete.

Shedding new light on Soviet debates about anthropogenesis and drawing attention to US-Soviet scholarly cooperation, Soviet Yeti research also reveals the boundaries of science and the place of popular science and amateurs within the Soviet scientific community.[295] Notably, Soviet Yeti experts would venture out at their own expense and their own initiative in the context of a political system in which all science was under the close supervision of the state and funded by the government.[296] Hominology, as the Soviet scholars and enthusiasts called their area of research, had enjoyed the backing of the Soviet Academy of Sciences, which granted them valuable rubles and conferred legitimacy on them as scientists. However, after just one short year the researchers lost this crucial support, which was terminated early in 1959. Ever since, hominologists have gathered at the Moscow Darwin Museum to plan and discuss their investigation of the mysterious being that straddles the human-animal divide. An exceptionally independent community – atypical in the Soviet context – they argued that

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or Distortion of Russian and Soviet Environmental History in Global Environmental Histories," *International Review of Environmental History* 3, Issue 2 (October 2017), 31-50.

[293] See chapter 3.

[294] Klaus Gestwa, *Die „Stalinschen Großbauten des Kommunismus:" Sowjetische Technik- und Umweltgeschichte 1948-1967* (München: De Gruyter, 2010). For a rich if brief discussion of Soviet Prometheanism and its deeper roots in Russian thought, see Mark Bassin, *The Gumilev Mystique: Biopolitics, Eurasianism, and the Construction of Community in Modern Russia* (Ithaca: Cornell University Press, 2016), 117ff.

[295] This is Brian Regal's angle, who has worked on Western cryptozoology. Regal focuses on the contribution of academic "monster hunters," as he calls them, as a lens to examine their status in the field of cryptozoology and to analyze the relationship between cryptozoologists with and without a PhD on the one hand and mainstream academia on the other. See Regal's insightful *Searching for Sasquatch: Crackpots, Eggheads, and Cryptozoology* (New York: Palgrave Macmillan, 2011). Michael McLeod likewise is interested in the question of pseudoscience and the role of the scientific community; he interprets the popularity of Bigfoot and Bigfoot in the context of "the anti-intellectualism now sweeping the country", *Anatomy of a Beast: Obsession and Myth on the Trail of Bigfoot* (Berkeley: University of California Press, 2009), quote: 4; Joshua Blu Buhs, finally, analyzes the cryptid in the context of American mass culture. See his *Bigfoot: The Life and Times of a Legend* (Chicago: The University of Chicago Press, 2009).

[296] For an account of the establishment of state control over science and the dynamics in the relationship between scientists and the state that highlights the agency of scientists and its limits as it evolved, see Nikolai Krementsov, *Stalinist Science* (Princeton: Princeton University Press, 1997).

their research provided fundamental insights into human evolution, making their affiliation with the Darwin Museum especially meaningful.

Making Sense of the Yeti

In order for us to make sense of the search for the Yeti, we must first hear how Soviet researchers themselves understood their object of study. Should the Yeti be considered human? Or was it an animal? If, on the third hand, it was a "manimal," or something in between human and animal, was it more animal or more man? Dmitrii Baianov, head of the Darwin Museum's Relict Hominoid Research Group born in 1932 and a student of the two of the Soviet Union's first leading Yeti researchers, addressed these questions head on. As Baianov explained to his American colleagues, the cryptid was a "hominoid", a "sub-human" manimal. "Just like 'metalloid' is a metal-like element," he clarified in a letter he wrote in the early 1970s in English to his American colleagues, "so 'hominoid' is a man-like creature (from Latin 'homo, hominis' – man)."

> '[H]ominoid' is a general term for all living sub-human bipedal primates – the Yeti, Bigfoot, Almasti etc. – no matter what their exact taxonomy is proved to be in the future. [...] To distinguish between living hominoids and those fossils studied by anthropologists we often use the term 'relict' (this is correct, not 'relic'), meaning 'surviving', thus saying 'relict hominoids'. The 'good old' terms – sasquatch, bigfoot, etc. – are sure also welcome to give color to the drab scientific prose.[297]

Despite its humor, Baianov's disquisition to his American counterpart shows how important scientific legitimacy was to him. Hominologists coined a Latin-derived name for their object of their research with the intention of establishing their field of studies as a recognized scientific discipline.[298] Baianov's colleagues in the West pursued the same strategy but subsumed the search for Bigfoot under "cryptozoology," or the study of hidden animals. As a term, "cryptozoology" did not carry the same implications as "hominology" for not all cryptids assumed to exist and studied by cryptozoologists are humanlike, such as the Loch Ness monster Nessi. Hominology, narrower in scope than cryptozoology, was intended specifically to bridge the "immense gap existing now between the zoological and anthropological departments of primatology." By accepting the term hominology Soviet researchers signaled that the creature they studied was neither human nor beast, but a living missing link.[299]

As students of a living missing link, hominologists asserted that their research contributed to the history of anthropogenesis. Two of the most renowned Soviet experts in both primatology and anthropology indeed showed interest in hominology, namely the

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[297] Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 "Russian Letters," – Document "Coming to terms."

[298] Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 "Russian Letters" – Document "Coming to terms" (original letter is in English). Baianov wrote that the "term "hominoid" for the snowman and its potential cousins was first suggested by P. P. Smolin and claimed credit for coining the term "'hominology' as the science of hominoids and 'hominologists' for researches in this science." Ibid.

[299] Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 «Russian Letters» - Document "Coming to terms." Regal, *Searching for Sasquatch*, 19ff.

Darwin Museum's Nadezhda Ladygina-Kots and Moscow University's Mikhail Fedorovich Nesturkh.[300] Both Nesturkh and Ladygina had helped to establish a narrative of hominization that emphasized the use of tools and labor as the driving forces of this process. This interpretation, which consolidated under Stalinism, came under attack from leading hominologists, as will be shown below.

As living missing links or "living fossils," surviving relict hominoids were beings that should, by all accounts, have long vanished from the face of the earth. Defying all "logic" – as well as Darwin's theory of evolution – they lived in the shadows of human civilization.[301] Baianov, aware of the contentious nature of the idea of a living missing link, insisted defensively that it was the supposed existence of "such a gap in life between man and the ape" that required explanation, not an extant link between the two.[302] Discoveries of animals thought to be extinct, such as the Coelacanth, a fish that had only been known as a fossil until fishermen pulled a specimen from the ocean in 1938, further justified the search for the Yeti in the eyes of hominologists and cryptozoologists.[303]

In his discussion of the term "living fossils," cryptozoologist Bernard Heuvelman admitted that the "survival of archaic forms" implied a specific understanding of the "evolutionary tree." Rather than "a straight bamboo of successive stages," the tree he had in mind was one of "complex" growth with "almost parallel branches bursting occasionally into bushes and twigs." He maintained, importantly, that "each new form evolves parallel to the older forms." In contrast to Heuvelman, Darwin suggested in a cautiously formulated passage in *The Origin* that "all the intermediate forms between the earlier and later states, that is between the less and more improved state of a species, as well as the original parent-species itself, will generally tend to become extinct." Perhaps Heuvelman, whose work was influential across the Iron Curtain, was conscious of the tension, and he elaborated on the specific conditions necessary to ensure the survival of living fossils in attempting to reconcile living fossils – on which cryptozoology and hominology were predicated – with Darwin's theory of evolution. To endure, older forms needed to escape the competition with better-adapted forms, circumstances most likely met in remote and isolated regions, according to Heuvelman.[304]

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[300] Comparative psychologist and primatologist Nadezhda Ladygina-Kots was receptive to the hominologists' arguments for a missing link when she wondered whether the animal in question was a "transitional form between higher primates and humans." GDM f. 11 op 1 ed. 1379 (KP OF 15111/1503), ll. 1f; renowned anthropologist M. F. Nesturkh, author of a standard textbook on human evolution first published in 1958, voted in support of founding the Commission on the Snowman at the 1958 meeting of the Presidium of the Academy of Sciences. He conceded at the Presidium's meeting that it would indeed be "important for the science of humankind and its origins, for anthropogenesis, as well as for all branches of science on humankind" if a "two-legged ape" were found. ARAN f. 2 op. 6 d. 268, l. 246.

[301] See Heuvelman's *On the Tracks of Unknown Animals*.

[302] Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 «Russian Letters», 1973 letter from D. Baianov to Prof. John Napier with copy sent to Rene Dahinden. John Napier was a British primatologist who became enthralled in Bigfoot research.

[303] ARAN f. 2 op. 6 d. 268, l. 218; Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 «Russian Letters» - letter from Baianov to Prof. John Napier with copy sent to Rene Dahinden (1973).

[304] Heuvelman, *On the Tracks of Unknown Animals*, quote: 81; Charles Darwin, *The Annotated Origin: A Facisimile of the First Edition of* On the Origin of Species, edited by James T. Costa (Cambridge: The Belknap Press of Harvard University Press, 2009), quote: 121.

If Soviet hominologists agreed that the Yeti was a living missing link, a "relict hominoid," their opinions diverged when it came to the creature's exact place on the tree of evolution. Some thought the evidence available indicated that the Yeti was closer to apes, while others considered it closer to humans.[305] Among Russian scholars, the hypothesis of the Yeti as a modern-day *gigantopithecus*, a giant ape, which was so popular among American researchers like Washington University's Grover Krantz,[306] found little backing. Although anthropologist Mikhail Nesturkh presented this theory in 1958 at the Presidium of the Soviet Academy of Sciences, none of the most prominent early Soviet hominologists, the founders of the Relict Hominoid Research Group who met regularly at the Darwin Museum, backed the *gigantopithecus* theory. These founding fathers of Soviet hominology included professor of zoology Aleksandr Mashkovtsev, the Darwin Museum's zoologist Petr Smolin, and professor of history Boris Porshnev, a well-known historian of popular resistance and risings in France. According to Mashkovtsev, the relict hominoid was a *pithecanthropus*, also known as "Java Man," whereas Smolin argued it represented the "australopithecine stage" of evolution, while Porshnev drew on advances in paleoanthropology according to which Neanderthals and humans overlapped.[307]

Significantly, the Neanderthal hypothesis located the Yeti cryptids in great evolutionary proximity to *homo sapiens*, thus exacerbating what Boris Porshnev had identified as a philosophical challenge – a being that looks like a human but acts like an animal. Porshnev had spent much time studying the skeleton of the Neanderthal boy found in the Uzbek cave of Teshik Tash in 1938/39 and conducted a comparative analysis of the Yeti's and Neanderthal's morphology. The available evidence for analyzing the Yeti's morphology included descriptions of a scalp and of a mummified hand, which both had been preserved in a monastery in the Himalayas and were said to belong to a Yeti. He also based his analysis on a range of photographs of tracks and casts of footprints from the Himalayas, North America, as well as some materials of lesser technical quality from the Caucasus, including drawings. He specifically highlighted Eric Shipton's photographs of tracks taken in 1951 at Mount Everest as well as "plenty of control materials," i.e. unspecified photographs taken of tracks on other occasions. He also mentioned the gypsum cast of a Yeti footprint from Tom Slick's 1958 expedition to the Himalayas.[308] Based on this available evidence, Porshnev concluded that Yeti and Neanderthal shared too many traits to be incidental. For example, the feet of both lacked an arch.[309] Apart

[305] Porshnev, *Sovremennoe sostoianie*, 345.

[306] ARAN F. 2 op. 6 d. 268, ll. 245f. Dmitrii Baianov dismissed this theory a little more than a decade later, arguing that size alone should not be a criterion and that simply too little was known about *gigantopithecus* to pass judgment. Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 «Russian Letters» letter to G R Strasenburgh, JR in Washington DC, dated July 1973, 4f; On the theories American researchers put forward, see: Regal *Serching for Sasquatch*, 25.

[307] Porshnev, *Sovremennoe sostoianie*, 354.

[308] Porshnev, *Sovremennoe sostoianie*, 278ff.

[309] ARAN F. 2 op. 6 d. 268 l. 228; Porshnev, *Sovremennoe* sostoianie, 273ff (for the comparative analysis of the feet: Ibid., 286ff); D. Baianov and I. Burtsev in Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 «Russian Letters» see the document captioned "Preliminary Notes on the Materials of American Hominologists: Roger Patterson's Filmstrip – Photographs and Plastercasts of Footprings obtained by Rene Dahinden and others – Grover Krantz's article Anatomy o f the Sasquatch Foot" [dated 1972], 1f; Smithsonian, National Anthropological Archive,

from morphology, however, Porshnev underscored that the hominoids were nothing but animals: "In terms of lifestyle, [the Yeti] acts like an animal." Nothing indicated that they create tools – an explanation for why Yetis leave no archaeological evidence behind – and they are masterfully adapted to the various environs in which they dwell.[310] Porshnev stressed that Neanderthals were known for their diversity and speculated that the relict hominoids represented the backward elements of the species. For this reason they had possibly been expelled from the community of human ancestors, he conjectured, as these underwent a period of rapid development.[311]

A member of the second generation of Soviet hominologists, Dmitrii Baianov, later drew on Porshnev's observations to support the Neanderthal hypothesis. Baianov was convinced that the various pieces of evidence available, including the almost one minute long capture of a Bigfoot on camera in Northern California's Humboldt County by Roger Patterson and Robert Gimlin in 1967, the available Yeti footprints, and Porshnev's morphological analyses, all confirmed one another.[312]

Those who claimed to have encountered the Yeti likewise grappled with the question to what extent these beings resembled humans. Soviet border guards, for example, had trouble identifying the nature of the beast. One guard, who served on the border unit of the NKVD between 1930 and 1933 in a region close to the Fedchenko glacier in the Pamir, came across what seemed at first to be a man illegally crossing the border. A closer investigation of the footprints, however, raised more questions than answers. The traces were similar but not identical to those of humans.[313] American researcher Ivan Sanderson, praising "the usual Russian mania for precision and suitable confirmation," recounted another puzzling report from the Soviet Union. V. S. Karapetian, "lieutenant-colonel of the Medical Service of the Soviet Army," was called upon in 1941 to examine a "curious creature" that had been caught in the mountains. Was this a spy? Karapetian found the man in a "cold shed" to which his captors had transferred him because his perspiration had been out of control in the warm room in which they had initially confined him. The physical exam left no doubt that the prisoner, who had refused all drink and food, was "a man, because its entire shape was human." Yet the dark hair on his body struck his examiner as unusual, and so did the creature's eyes: "His eyes told me nothing. They were dull and empty – the eyes of an animal. And

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Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 «Russian Letters» letter to G R Strasenburgh, JR in Washington DC, dated July 1973.

[310] Porshnev, *Sovremennoe sostoianie*, 5 and 317 (animal characteristics); 339 (discussion of tool use); 345 (relict hominoids rejected by human ancestors as backward elements).

[311] Porshnev, *Sovremennoe sostoianie*, 345: "В известный период становления человека и человеческого общества происходили довольно напряженный и относительно быстрый процесс отсеивания и выталкивания всех тех элементов в стадах наших предков, которые воплощали в себе звериное начало."

[312] Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 «Russian Letters» "Preliminary Notes on the Materials of American Hominologists: Roger Patterson's Filmstrip – Photographs and Plastercasts of Footprings obtained by Rene Dahinden and others – Grover Krantz's article Anatomy o f the Sasquatch Foot," dated 1972, signed Dmitry Baianov and Igor Burtsev. A similar wealth of fossil data was regrettably not available to verify the Pithecantropus hypothesis favored by A. Mashkovtsev, although Baianov thought it likely that the feet of Pithecantropi resembled those of Neanderthals. Ibid., 3.

[313] ARAN F. 2 op. 6 d. 268, 233f.

he seemed to me like an animal and nothing more." Karapetian concluded that this was "a wild man of some kind."[314]

The unresolved question of the human or animal nature of the cryptid creatures was particularly pressing in the instances of sexualized encounters. Best known and most explicit was the case of Zana, a "wild forest woman" whom hunters supposedly outwitted and captured in the last decade of the nineteenth century in the Abkhazian settlement Tkhina. Zana, as A. Mashkovtsev learned during a research trip to Abkhazia in 1962, was both hairy and dark-skinned "like negroes." Her name indeed translates as "black, black-skinned." She had large lips, breasts that drooped down all the way to her belly (a recurrent feature in descriptions of hominoid women), oversized nostrils, and her feet were different to those of humans. Fire inspired fear in her and she possessed great physical strength, which made her a valuable laborer. Although unable to communicate with words, Zana was remembered as welcoming male visitors to her cabin.[315]

Two aspects reported about Zana were especially relevant for hominologists invested in classifying the Yeti, namely reproduction and speech. Zana's unions with human men led to offspring and her children were viable, according to later reports. The question was critical in the light of the twentieth-century biological and relational definition of species as natural populations "defined by the noninterbreeding with other populations."[316] "[I]f Zana was truly a wildwoman and gave birth to humans, then, undoubtedly, the creatures under discussion, at least those of Eurasia, are phylogenetically our closest kinsfolk," pondered Baianov.[317] Although fertile, not many of Zana's children survived. Among those who did was son Stopa, born around 1895, who allegedly died sometime in the 1950s. He was said to have been a Muslim and was thus apparently capable of mastering human language and thought, whereas Zana reportedly had possessed no speech and only occasionally "muttered something" (*tol'ko inogda chto-to bormotala*).[318] To hominologist Porshnev this meant that the traits of humans were dominant.[319]

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[314] Ivan T. Sanderson, "Three Types of Yetis are Described," *The Minneapolis Star* (Oct. 20, 1962), 10A.

[315] Mashkovtsev's and Baianov's information diverges on the question of when Zana was captured. Whereas Mashkovtsev's documents mention that she was captured in the 1890s, Baianov's volume states that she was buried in the 1880s/1890s: GDM f. 43 k.3 ed.26, ll. 5-13 versus Bayanov, *In the Footsteps*, 46. *Nauka i religiia* published the story of Zana in 1964: A. Petrov, and M. Kudriantsev, "Neandertal'tsy zhivy?," *Nauka i religiia* 6, no. 11 (1964), 61-70.

[316] Ernst Mayr put forth this definition in 1942. For this quote, see his overview of species definitions in "The biological meaning of species," *Biological Journal of the Linnean Society* (September 1969), 311-320, quote: 134. Mayr is referenced in the third edition of the Great Soviet Encyclopedia (1971): N. V. Timofeev-Resovskij, N. V. Glomov, and V. I. Ivanov, "Vid" *Bol'shaia Sovetskaia Entsiklopediia: tret'e izdanie* vol. 5 (Moscow: Izdatel'stvo "Sovetskaia entsiklopediia," 1971), 28f. The idea that organisms which, under "normal circumstances" do "not intermix with one another" and which, if they do interbreed, do not produce "normal fertile offspring," is already referenced in the second edition of the encyclopedia; Mayr, however, is not listed among the recommended literature at the end of that entry: N. a., "Vid," *Bol'shaia Sovetskaia Entsiklopediia: tret'e izdanie* vol. 8 (Moscow: Izdatel'stvo "Sovetskaia entsiklopediia," 1951), 14-19, here: 14.

[317] GDM f. 43 k.3 ed.26, ll. 5-13; Quote about Zana's phylogenetic proximity to mankind: Bayanov, *In the Footsteps*, 225; on the question of interbreeding see also: Ibid, 176.

[318] GDM f. 43 k.3 ed.26, ll. 5-13. For a dissenting account, see Alexander Katayev's [Kataev] report of an encounter with two hominoids in the Urals who talked to each other and laughed, which is recounted in Bayanov, *In the Footsteps,*181-184. When asked "about their 'talking' and vocalization" Kataev elaborated that "[t]he sounds they made were very strange, resembling those of humans but dumb humans: Kh-Kh-Kh,

However closely related, key Soviet hominologists were not prepared to concede human status to the wild men and women. In the late 1950s, when hominology began to flourish, the officially sanctioned narrative of anthropogenesis was built on Friedrich Engels's essay *The Part Played by Labor in the Transition from Ape to Man* (written in 1876). As the title suggests, Engels argued that it was labor that drove anthropogenesis and played a formational role in the very first societies, with far reaching consequences that included the development of language. The use of tools distinguished humankind from the animal world, enabling our species to alter the environment according to our design and wishes.[320] While Darwin had emphasized the humankind's animal origins and proximity to animals, Soviet Darwinists studying the question of the human-animal relationship, among them Nadezhda Ladygina-Kots of the Darwin Museum, did not follow his lead. Instead, they referenced Engels and highlighted the differences that separate humankind from other animals, arguing that we, as the only beings that aim to master nature, are fundamentally set apart from nature.[321]

Anthropological literature that centered on tool-use and labor as the decisive marker of what it means to be human featured prominently on the reading lists of hominologists, who generally kept abreast of research in a number of disciplines.[322] Yet Moscow zoologist Aleksandr Mashkovtsev of the Relict Hominoid Research Group seemingly disagreed with his colleagues in anthropology and archaeology and what they had to say about hominization. Their sole focus on "sociological factors," especially the development of "stone tools" as a key technological development, struck him as a case of "vulgar Marxism," as he remarked in his private reading notes on the archaeologist G. P. Grigor'ev's work.[323] Mashkovtsev's friend and fellow hominologist Boris Porshnev, too, disagreed with the standard interpretation of labor and technology as constituting the driving force of anthropogenesis and the essence of what it means to be human.

Porshnev endorsed a definition of humankind that centered on language and thus diverged from the received doctrine promoted in the Soviet Union under Stalin. To him, the question whether relict hominoids wielded "primitive stone tools" was not decisive in determining whether or not they had crossed the threshold of being human. His 1963 book on "relict hominoids" listed several factors on which the classification of the Yeti as an anthropoid or hominoid depended. Tools were one criterion, but so were speech and societal organization; while he still cited Engels and discussed the creature's ability to manufacture and wield implements, Porshnev noted that prioritizing the question of tool use in defining the hominid family conflicted "with the principles of classifying biological species, which are always based exclusively on morphological differences."[324]

M-M-M-, No-No." Ibid., 183. Baianov comments that what he liked "about Katayev's story is the way he sticks to his own scenario no matter what the 'specialists' say. The 'specialists' say hominoids cannot talk, while Katayev […] asserts the contrary. It's a different matter, of course, whether the creatures have a human or 'monkey' language, a kind of exchange on emotions, not ideas." Ibid., 184.

[319] Porshnev, *Sovremennoe sostoianie*, 344.

[320] Karl Marx and Friedrich Engels, *Werke Volume* 20 (= Anti-Dühring, Dialektik der Natur) (Berlin: Dietz Verlag, 1990 [1962]), 444-455.

[321] See chapter 3 of this dissertation.

[322] Literature on geology, paleontology, and botany likewise featured prominently on the bibliographies for example of Mashkovtsev: GDM f. 43, k. 5 ed. 52, passim.

[323] Mashkovtsev's notes are from 1971. GDM f. 43 k. 3 ed. 26, l. 49.

[324] Porshnev, *Sovremennoe sostoianie*, 274 (tools as one of three criteria for classification as hominid); 361 (Engels reference); 339 (discussion of the Yeti's ability to use tools; 348.

Porshnev published these ideas three years after Jane Goodall first observed chimpanzees using and manufacturing tools in the wild (1960) and the same year that she published her findings in a cover story in the *National Geographic*, which brought them to the attention of a broader audience. The Yeti researchers followed Goodall's work attentively.[325] Even more explicit was Porshnv's rejection of established Soviet doctrine in a contribution published in 1974, posthumously, in the journal *Current Anthropology* under the rubric "Ideas for Discussion." In this article, Porshnev reiterated his criticism of considering "the presence of accompanying stone implements" as the key criterion for classifying "fossil forms in the family *Hominidae*" and highlighted the importance of speech instead. He bemoaned that *pithecantropi* were "bracketed with man" even though they lacked "the higher cerebral functions which make speech and reason possible." The family of *Hominidae*, according to Porshnev, was constituted by "just one genus, *Homo*, represented by a single species, *H. sapiens* (subdivided into *H. sapiens fossilis* and H. *sapiens recens*)." What distinguished all *Hominidae* was "the presence of those formations in the structure of the brain which make speech possible and the correlative features in the organs of speech and in the face," not bipedalism and tool making.[326]

Porshnev's ideas raised important questions. Was the new definition of humankind that departed from previous Soviet understanding of the question empirically sound? Was *Homo sapiens* indeed the only being that had mastered language? In his commentary on Porshnev's piece, Bennett Blumenberg invited his readers to consider the cutting-edge experiments to teach chimpanzees "Yerkish." After attempts in the 1950s to instruct chimpanzees in vocal imitations had failed, new efforts – Alice and Beatrice Gardner's work with Washoe starting in 1967 – focused on American Sign Language, and *The Lana Project* to teach chimpanzee Lana the lexigram-based language was begun in 1973, just one year prior to the publication of Porhsnev's "Ideas for Discussion."[327] Yerkish had been "designed for the purpose of exploring the extent to which non-human organisms (e.g. great apes) could be taught to acquire linguistic skills" and was named after the primatologist Robert Yerkes.[328] If Blumenberg concluded that "it should now be obvious to everyone that *Pan* [the genus chimpanzee] should really be sunk in the genus Homo" his Soviet colleagues disagreed. Taking it upon themselves to defend Porshnev's position after his death, Dmitrii Baianov and Igor Burtsev conceded that while animals can perform basic acts of communication such as greeting or warning one another of dangers in their own "natural communication systems and not such artificial things as Yerkish." Yet there were many "points" at which the speech of humankind differed from that of animals. They concluded sarcastically that it would be fair to "at least" ask the chimpanzee "his opinion before plunging him into our excessively vocal genus. If

[325] Dzhein van Lovik-Gudall, "Sredi shimpanze," *Nauka i zhizn'* 32 no. 5 (1966), 102-110. Yeti researcher Mashkovtsev followed Goodall's research attentively. He preserved a copy of this article in his collection: GDM f. 43 k. 3 ed. 31 (no pagination).

[326] Boris F. Porshnev, "The Troglodytidae and the Hominidae in the Taxonomy and Evolution of Higher Primates," *Current Anthropology* vol. 15, no. 4 (December 1974), 449-450, quotes: 449.

[327] D. M. Rumbaugh, ed., *Language Learning by a Chimpanzee: The Lana Project* (New York: Academic Press, 1977); Igor Hanzel, "Sue Savage-Rumbaugh's Research into Ape Language – Science and Methodology," *Organon* vol. 19 no. 2 (2012), 201-226 http://www.klemens.sav.sk/fiusav/doc/organon/2012/2/201-226.pdf.

[328] Ernst von Glasersfeld, "The Yerkish language for Non-Human Primates," *American Journal of Computational Linguistics* (1974), 1–55. http://www.aclweb.org/anthology/J79-1012.

Blumenberg can produce a chimp which can argue the point, be it in Yerkish and within 100 words, we will promptly capitulate."[329] Pending such a chimp, the younger generation of Soviet hominologists embraced Porshnev's definition of humankind as a being defined by speech, not labor, a heretical position departing from the Stalinist doctrine.

Critically, with respect to evolution, questions remained about the animal origins of relict hominoids and the proximity of humankind to other animals. Porshnev, in keeping with the dominant narrative, emphasized the great distance between humankind and the animal world. Those "bipedal higher primates" who did not meet the key criterion of speech had to be considered *Troglodytidae* (or *Pithecanthropidae*), a term Porshnev adopted from Linnaeus (*homo troglydites*).[330] As Dmitrii Baianov and Igor Burtsev clarified, Porshnev's thesis amounted to a "denial that man descends directly from the ape. Between ape and man Porshnev places a whole zoological family of higher bipedal primates: the Troglodytidae."[331] Some of them may roam the earth as "relict 'Neanderthal beasts'" in some parts of the world, and as "'Pithecanthropus beasts'" in others, or even as "mixed forms of the former two or even [sic] other forms."[332] The "wild men" were thus a bridge between humans and animals that accentuated the distance between the two worlds. While challenging the criteria by which humankind was defined, Porshnev's theory did not undermine the notion prevailing in the Soviet Union that a gulf separates us as a species from animals and of the truly unique nature of *homo recens*.[333]

While Hominologists confirmed the distance of our species from the animal world, the mere existence of the Yeti undermined another central tenet of the Engels-inspired assertion that humans exercise control over the natural world. Researchers attempting to order and make sense of that world had to admit that the snowman posed a challenge. Elusive as the creatures were, they escaped classification, as attested by the debates over their precise relationship to *homo sapiens fossilis* attest. Further, the Yeti was associated with the wilderness and uncharted regions of the earth. The only consistent characteristic of relict-hominoid habitat, according to early hominologist Porshnev, was that no humans inhabited it[334] – or, as Dmitrii Baianov put it later: "there has always been and is now room on earth where to avoid the very smell of our glorious

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[329] Bennett Blumenberg, "Comments," *Current Anthropology* vol. 15, no. 4 (December 1974), 450; Dmitry Baianov and Igor Burtsev, "Reply," *Current Anthropology* vol. 15, no. 4 (December 1974), 452-456, here: 455.

[330] Boris F. Porshnev, "The Troglodytidae and the Hominidae in the Taxonomy and Evolution of Higher Primates," in *Current Anthropology* vol. 15, no. 4 (December 1974), 449-450, quotes: 449.

[331] Dmitry Baianov and Igor Burtsev, "Reply," in *Current Anthropology* vol. 15, no. 4 (December 1974), 452-456, here: 452. Porshnev considered the thesis of the direct descent of man from apes "without an intermediary zoological link" as a weak point of "Darwinian evolutionism (and the corresponding view of Engels) […]. Now we can restore this link by embracing in taxonomy all the extinct and living forms belonging to it." Porshnev, "The Troglodytidae," 449.

[332] Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 «Russian Letters,» – Preliminary Notes on the Materials of American Hominologists: Roger Patterson's Filmstrip – Photographs and Plaster casts of Footprints obtained by Rene Dahinden and others – Grover Krantz's article Anatomy of the Sasquatch Foot"[1972], quote: 4.

[333] Soviet researchers like the Darwin Museum's primatologist Nadezhda Ladygina-Kots had insisted on qualitative differences separating humankind from the animal world before Porshnev. See chapter 3.

[334] Porshnev, *sovremennoe sostoianie*, 322.

species."[335] In the twentieth century, marked as it was by industrial modernity and urbanization – which successive Soviet leaders pursued relentlessly – where would such pockets of wilderness survive?

Hominologists suspected that the snowman dwelled in remote areas on the periphery of the empire, where the only living humans had been targeted by the Soviet state as backward, needing to advance in even bigger steps than the rest of the empire towards communism.[336] True, humans had been present in the Caucasus and Siberia since ancient times, but researchers contended that these remained promising habitats for the cryptid snowman, and not just because of their ecosystems. Anthropogenic pressures had yet to penetrate the overwhelmingly mountainous terrain of the Tajik SSR and the vast northern expanses of Siberia to the same extent as the region west of the Urals. When reports of Yeti sightings in the home of the Khanti and Nenets peoples in the Far North declined by the late 1960s, hominologists placed the blame on the advances of "geologists and builders."[337] Searching for a humanlike creature that persistently evaded researchers in regions far away from the seat of the Relict Hominoid Research Group in Moscow, Porshnev and his colleagues initially concentrated on the Caucasus, primarily the Pamirs; young geologist Vladimir Pushkarev, a member of the Moscow Research Group, searched Siberia in the 1970s, and he paid with his life for pursuing the snowman in this inhospitable terrain. In the late 1970s, Central Asia again became the focus of the hominologists' fieldwork, in spite of the great distance from European Russia and consequential difficulties and expenses that research there entailed.[338]

To further complicate matters, sightings would take the story of the Soviet Yeti, the "living fossil" inhabiting the less-civilized periphery, closer toward the imperial center. Hominologist Baianov admitted that he struggled with the idea that the Yeti, as a creature associated with wilderness, might dwell in the heart of the empire. "The more forbidding or distant the land the easier it was to accept it as a habitat of relict hominoids," confessed Baianov in the 1990s. "But when it came to territories west of the Urals, well…"[339] Yet he saw himself forced to acknowledge reports of sightings in regions "believed to have been civilized and populated […] for a long time," like Crimea on the Black Sea. Reports of sightings here dated to the mid-1970s. Yetis also turned up in the Urals, the mountain range that marked the geographical boundary between the Asian and European part of the Soviet Union. Such material dated to the days of Porshnev, who passed away in 1972. In 1992, just one year after the end of the Soviet Union, the "nearest sighting so far to the seat of [the Darwin Museum's Relict Hominoid Research Group]" occurred. "[A] giant Wildman was seen by a reliable witness in a wood 37 kilometers north of Moscow!"[340]

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[335] Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 «Russian Letter,s» letter to G R Strasenburgh, JR in Washington DC, 2f.

[336] See f. ex. Terry Martin, *The Affirmative Action Empire: Nations and Nationalism in the Soviet Union, 1923–1939* (Itaca: Cornell University Press, 2001); Francine Hirsch, *Empire of Nations: Ethnographic Knowledge and the Making of the Soviet Union* (Ithaca: Cornell University Press, 2005).

[337] Bayanov, *In the Footsteps*, 119 (Tajikistan), 128f (decline of sightings in the Far North).

[338] Bayanov, *In the Footsteps*, 123ff (on Pushkarev) and 106ff on the renewed attention paid to research in the Caucasus.

[339] Bayanov, *In the Footsteps*, 152.

[340] Bayanov, *In the Footsteps*, quote on Crimea: 63; 181 (Urals); 216 (Moscow sighting).

Puzzling over the identity of the Yeti, Abominable Snowman, or Almasty, Soviet researchers from the late 1950s onwards pondered the human-animal divide. Focusing on language as a key criterion, they revised the definition of what it is that constitutes humankind's uniqueness – for just like the consensus developed under Stalinism, these researchers continued to affirm that humankind, in fact, is qualitatively different from the rest of the animal kingdom. In their mind, the Yeti's existence was beyond doubt, and the longer they searched the more evidence they found. What is more, Yetis appeared in unexpected locations. They seemed to populate a much wider home range than originally assumed, stretching from the periphery to the industrialized regions of European Russia. What the hominologists did not engage with is the question this development raises: did the "wilderness" with which the Yeti was associated extend all the way to a Moscow in political turmoil (the Moscow sighting took place in 1991)? Or was the snowman perhaps less wild and the divide between humankind and animals consequently less significant than the hominlogists assumed?

The Search For the Yeti

Many Soviet Yeti researchers, especially of the first generation of cryptozoologists, including Porshnev, Smolin, and Ladygina, belonged to the academic establishment. Nevertheless, research into relict hominoids faced a crisis of legitimacy after the Academy of Sciences voted to dissolve its Snowman Commission in 1959. As Dmitry Baianov recounted, "Snowman studies (or hominology [...]) was declared by the academic establishment to be a pseudoscience, along with astrology and parapsychology."[341] Keeping Soviet hominology alive beyond 1959 was the work of a number of dedicated individuals who spared neither time nor resources to pursue the question of the snowman on their own, without the support of the Soviet state.

That Soviet Yeti researchers initially enjoyed state sponsorship was cause for both envy and alarm among American cryptozoologists. Popular biologist and writer Ivan T. Sanderson (1911-1973) apparently sought to exploit the Cold War to secure funding for his research, when he warned that

> "[I]n one corner we have the organized might of Russia which can call upon a multitude of scientists and order them to go look, while in the other corner is a little band of what I can only call gallant men all but one or two without even funds, derided and scoffed at by public, press, and organised science, who are battling forward through mountains of red-tape as well as rhododendrons to the airy peaks of discovery. We ought to rally behind these rugged individualists and give them a boost in the name of freedom and free enterprise."[342]

[341] Bayanov, "Preface," 6.
[342] American Philosophical Society, Ivan T. Sanderson Papers 'The Abominable Snowman," folder no. 1, 15. Published as "The Abominable Snowman," *Fantastic Universe*, vol. II, no. 6 (October 1959): 58-64, quote: 64.

Soviet intentions could only be sinister, supposed Sanderson, who suspected that the aim of Soviet hominologists was to "rock the entire religious and ethical pyramid [of the West] to its very foundations."[343]

Sanderson alleged that the state "call[ed] upon" and "order[ed]" a "multitude of scientists" to embark on the Academy's expedition to the Pamirs to conduct research on the Yeti. However, the expedition would hardly have taken place had there not been support for this research within the academic community. State sponsorship (at least for the first year) came in the form of endorsement and financial support for research by the Soviet Academy of Sciences. The fact that the Academy of Sciences dropped the issue after just one year suggests that the initiative came not from above – what Sanderson called "the organized might of Russia" – but from scholars who advocated that the possibility of the Yeti's existence should be taken seriously.

The debate whether the snowman existed and whether it would be worth it to pursue a search for the elusive being took place at Moscow State University, at the Moscow Darwin Museum, and at the Soviet Union's most prestigious scientific institution, the Academy of Sciences.[344] The Presidium of the Soviet Academy of Sciences met on January 31 1958 to deliberate on the question of the snowman. Several members of the Academy from various disciplines attended the meeting, among them the chemists Aleksandr Nikolaevich Nesmeianov and Aleksandr Vasil'evich Topchiev, who served as the Academy's president and main scientific secretary of the Academy's presidium respectively, the economist Konstantin Vasil'evich Ostrovitianov, and the mathematician Sergei Alekseevich Khristianovich. Among those academicians whose expertise aligned more closely with the questions at hand were the anthropologists Mikhail Fedorovich Nesturkh and Georgii Frantsevich Debets. Hydrologist Aleksandr Georgievich Pronin participated at the meeting as a witness who himself alleged to have encountered a snowman, and Boris Fedorovich Porshnev presented himself to the assembled colleagues not as the historian of France for which he was known and honored, but as an expert on the Yeti.[345]

Porshnev's presentation took the members of the academy on a journey to the Himalayas and Pamirs where the mysterious animal was said to dwell. He began his historic account with a British expedition: Laurence Waddell's 1898 exploration of the Himalayas. He also spoke about the recent *Daily Mail* expedition of 1954. To Porshnev, it was important to highlight that this expedition was the first in which specialized researchers made a point of questioning local villagers about the Yeti.[346] Looking back from the vantage point of 1958, Porshnev regretted that in the 1930s, when V. I. Sobolevskii reported of the stone-throwing apes that revealed local Tajik and Kyrgyz hunters' knowledge about the snowman, Sobolevskii's findings had not been taken seriously, despite the discovery of footsteps in the Pamir mountains similar to the ones found in the Himalayas. Only in the summer of 1957 did the mountaineer and mathematician Aleksandr Danilovich Aleksandrov, who would soon join the ranks of the

[343] Ivan T. Sanderson quoted in Regal, *Searching for Sasquatch,* 26. Sanderson failed to explain why a discovery of the snowman only posed an ideological challenge if discovered by Soviet scientists, as Regal notes. Ibid. See also Ivan T. Sanderson, "The Abominable Snowman," *Fantastic Universe* vol. II, no. 6 (October 1959): 58-64.
[344] ARAN f. 2 op. 6 d. 268, l. 241.
[345] ARAN f. 2 op. 6 d. 268, ll. 213-265.
[346] ARAN f. 2 op. 6 d. 268, l. 121; ll. 213f.

Academy of Sciences (1964), venture with a group to the mountain range in Central Asia. Part of their accomplishment was to gather information by talking to the local population. The available evidence for the snowman was both indirect and direct, as Porshnev summarized, including traces in the snow as well sightings of the creature. Someone who chanced upon the snowman twice in 1957 was hydrologist Pronin, who attended the meeting. He saw the (m)animal, on the territory of the Soviet Union, from a distance of ca. 500 meters (ca. 1600 feet). What made Pronin a particularly valuable witness in the eyes of Porshnev was that he had never heard of the being prior to encountering it.

Even though the creature was elusive, Porshnev confidently reported to the Academy that the beast seemed to be of solitary nature and rarely spent time in groups. If they did socialize with other specimens, the groups ranged from two to five individuals. Their diet consisted of various plants and roots as well as marmots and birds, such as tree creepers, and they were sometimes drawn to settlements to steal items. Porshnev warned that researchers thus needed to proceed with caution. The snowmen's home range was the roof of the world, the Eastern part of the Pamirs and the Himalayas, where they dwelled at an altitude of four to five and a half thousand meters (13000-18000 feet), at the "border of eternal snow and the upper border of the alpine zone." The creatures also seemed to migrate seasonally.[347]

To be sure, the discussion at the Presidium of the Soviet Academy of Sciences was heated and not all present in January 1958 were convinced that the expedition was likely to find snowmen; nor did everyone agree on the creature's existence. Some asserted that the creature populated only people's imagination and not the real world, a subject of folklore best studied by ethnographers. According to them, the sightings were "conscious or unconscious" misidentifications and the traces belonged to "some kind of bear species." But was such "absolute skepticism" justified given the wealth of material that testified to the existence of the Yeti? Porshnev clearly did not think so. He was confident that the existing evidence, such as the "bristle-like fur" that experts could not identify with any known creature, indicated that the snowman was a real being. The key arguments of the Yeti-deniers, by contrast, seemed untenable to him, including their claim that the traces were those of bears.[348]

"Science is an iron lady who requires verified conclusions, based on an examination of the whole sum of factors," explained the Academy's president Nesmeianov to yeti-eyewitness L. G. Pronin. Following Porshnev's talk, Pronin recounted to the assembled scientific establishment how he had chanced upon the snowman and told them of the letters he subsequently received from border guards and soldiers who described their encounters with the creature.[349] Nesmeianov tried to reassure Pronin, who felt his integrity questioned and wished to defend himself as the assembled academicians raised doubts about his account and reacted with suspicion to the fact that he changed some details of his story. Had he seen the (m)animal from the distance of 800 meters, or was it 500 meters (2624 or 1640 feet)? And what about the inconsistencies in

[347] ARAN f. 2 op. 6 d. 268, ll. 213f; 217; 222f.
[348] ARAN f. 2 op. 6 d. 268, l 215; 224.
[349] ARAN f. 2 op. 6 d. 268, l. 261. [Stenogramma zasedaniia prezidiuma AN SSSR, 31 Ianvaria 1958 goda]

his reports concerning the timing of his sightings?[350] Research into the question of the Yeti had to satisfy the highest scientific standards, the geologist S. V. Obruchev insisted. Unfortunately some of the Soviet publications on the topic (specifically the much-referenced report in the popular journal *Vokrug sveta*) did not, in his opinion, meet such standards.[351] Obruchev nevertheless remained optimistic regarding the snowman's veracity – unlike the anthropologist G. F. Debets. "The existence at some point in the past of a two-legged anthropoid ape," concluded Debets, was "generally beyond doubt." Such animals would certainly also have overlapped with humankind "for some time." However, opined Debets, it was "highly unlikely" that "a group of these apes" would have survived "into our era." Regarding the sightings, he acidly remarked that long periods of solitude can produce peculiar visions, a fact known to "anyone who went to the North, to the mountains." In spite of his overwhelmingly negative evaluation and low hopes that a scientific expedition would actually find the mysterious animal, Debets, too, supported the decision to look into the matter.[352]

Ultimately, the presidium decided to pursue the search for the Yeti. The assembled scientists considered the question serious enough that it could not be left to amateurs – border guards, locals, or mountaineers. Anthropologist Nesturkh concluded that "our [Soviet] science" owed "all of mankind" an answer to the question of the snowman and hoped that the investigation would yield insights into the history of the human species.[353] In addition, Soviet Yeti enthusiasts argued that the search for the unknown creature was yet another theater of the Cold War. Porshnev invoked the "scientific competition that is currently [1958] arising around the task of finding the snowman." While they were debating in the halls of the Academy of Sciences, an American expedition, financed by the millionaire Tom Slick, had arrived in Calcutta and was gearing up to search the Himalayas for the Yeti. The argument of scientific competition seemingly resonated with the Academy's president for Nesmeianov, who acknowledged in his closing words how embarrassing it would be if the Yeti were found, but not by Soviet scientists. He concluded the meeting with the announcement that Sergei Vladimirovich Obruchev – who evaluated the chances of finding the creature in the Pamirs skeptically – would lead the Commission on the Snowman, with the optimistic Boris Fedorovich Porshnev serving as the vice chair. The commission should cooperate with the Tajik Academy of Sciences and colleagues in China to ensure that the search would be comprehensive, including promising terrain in Tibet.[354]

Over the spring, summer, and fall of 1958, scientists from various institutes of the Soviet and Tajik Academies of Sciences went to remote regions of the Pamir mountains and cooperated with local hunters. On horses and skis, the zoologists, botanists, ethnographers, archaeologists, mountaineers, and members of the military worked their way through difficult alpine terrain, looking for animal tracks. The team even included some canine helpers, tracking dogs that had been trained with the help of apes from the Moscow zoo for the potential encounter with the mysterious apelike human or humanlike

[350] ARAN f. 2 op. 6 d. 268, l. 237; 250; Pronin defended his honor by blaming the newspapers for their inaccurate coverage and providing contradictory dates that misidentified when he had seen the snowman. ARAN f. 2 op. 6 d. 268, l. 265.
[351] ARAN f. 2 op. 6 d. 268, l. 249f.
[352] ARAN f. 2 op. 6 d. 268, ll. 255f.
[353] ARAN f. 2 op. 6 d. 268, ll. 245-247; 249; 251f; 258.
[354] ARAN f. 2 op. 6 d. 268, ll. 262f.

ape. On their search they encountered roughly sixty species of vertebrates, including mountain sheep (argali), and found tracks left by wolves and bears. What they did not find were the paths of creatures unknown to science. One group of researchers trekked all the way to the world's longest glacier outside of the polar regions, the Fedchenko glacier, to look for evidence of the snowman. The teams studied up to 40 valleys, examined some even twice, searched caves, interviewed local residents, and placed baits to attract the creature. In the end, they reported to the Presidium of the Soviet Academy of Sciences that the expedition had provided an opportunity to "evaluate the ecological situation and to reach the conclusion that this [region did not provide] favorable circumstances for the snowman." This evaluation was especially true of the steep and barren slopes of the Sarez lake, a recently formed lake in the Gorno-Badakhshan region of Eastern Tajikistan that resulted from a powerful earthquake in 1911.[355] The expedition had returned from almost a year of intense research in difficult and remote terrain without having located a single snowman.

In January 1959, the Academy's presidium reviewed the Commission's work. In his final evaluation the Commission's head, Sergei Obruchev lamented that the team had been assembled in a hurried manner and did not include sufficient zoological expertise. He concluded that the chances of finding the creature on the roof of the world had now dropped from "a probability of two to three percent" to essentially zero. Researchers who visited the Tian-Shan and Pamir regions should continue to gather ethnographic materials, but Obruchev saw no point in supporting further specially dedicated snowman expeditions. Members of the Academy of Sciences present at the meeting expressed their disbelief regarding the expedition's failure to coordinate with colleagues in China. In the end, six of the nine members of the Commission on the Snowman in attendance voted to liquidate the body and agreed that the search should be discontinued. The Commission's findings were compiled and published, in a small print run of only 400 for the first volume. In sum, according to Mikhail Mikhailovich Dubinin, "the expedition fulfilled its task, albeit with a negative result," and this verdict closed the snowman's main chapter for the Soviet Academy of Sciences.[356]

However, not all agreed that the search for the snowman was a futile undertaking. The commission, admitted Obruchev, was divided on how to evaluate the ethnographic materials, with some discounting them as unreliable – Obruchev included – and others, such as the commission's vice president Porshnev, confident that the interviews and folkloric evidence collected would yield valuable insights into the existence of an actual

[355] ARAN f. 2 op. 6 d. 292, ll. 92-117, quote: l. 97. Conveniently, the expedition explored territories – for example lake Sarez – that were not yet properly mapped. Hominologist Boris Porshnev later supposed that the exploration of little-known areas was the primary purpose of the expedition, and not the search for the Yeti. Porshnev, *Sovremennoe sostoianie*, 73.

[356] ARAN f. 2 op. 6 d. 292, ll. 98f; 115 and 131 (failure to cooperate with China); 148 (majority of members of the snowman commission agreed that it should be liquidated); quotes: 99 (probability of finding the snowman) and 153 (Dubinin). The commission was the most important chapter in the history of the snowman and the Soviet Academy of Sciences; for the sake of completeness, it should be mentioned that the Academy's Department [otdelenie] of Biology entertained a "commission to determine the expediency (*tselesoobraznost'*) of the further study of the snowman." A document dated to July 1960 lists noted scientists representing various disciplines as members of the commission, including the anthropologist V. V. Bunak and comparative psychologist N. N. Ladygina-Kots. GDM f. 11 op. 1 ed. 1751 (KP OF 15111/1751), l. 2 For copies of the five volumes of informational materials gathered by the Commission on the Snowman, see. GDM f. 48 op. 1 ed. 1-5.

creature. Porshnev continued to endorse optimism, pointing to a plethora of evidence gathered by locals, government officials, and scholars, and he protested that Obruchev unfairly portrayed him as a naive believer in folkloric fairy tales.[357] The American and British Himalayan expeditions, for example, had produced photographs and casts of traces in the snow. The evidence he referenced included a skull, a mummified hand kept at a Buddhist monastery, and hair that experts in Britain had examined and had been unable to ascribe to any known species. Porshnev further testified that a Chinese scholar visiting Moscow reported that "one hunter" had skinned a "wild man" whom he had killed and whose hide the hunter had preserved. In his opinion, the problem with the expedition was that its members had approached their task the wrong way. It had been naive to go into the field and expect to find and capture a specimen without appropriate knowledge of the species' habitat and biology. With so much more material now available, Porshnev thought that chances of finding the snowman had improved significantly. [358]

For those who did not lose their conviction that the Yeti was fact and not fiction, the work of the expedition left only a bitter aftertaste. A chance had been lost; the whole undertaking had been appropriated by other interests. The botanists had, in the opinion of some, dominated the enterprise.[359] As a "complex" expedition, the Commission had been tasked with looking for the snowman, but also with "'conducting botanical and zoological research on the most understudied and difficult to reach regions of the Pamir,'" such as Lake Sarez. To be fair, the region explored included the place where hydrologist Pronin reportedly had encountered a Yeti specimen.[360] Nevertheless, the hominologists became convinced that the official support they had received had been at best half-hearted. "Boris Porshnev confided to us that the Pamirs expedition was under the constant surveillance of a special detachment of border guards," testified Pronin. These border guards "used to amuse themselves by hunting mountain goats and other game, thus frightening off any possible snowmen."[361] The position of skeptics was strengthened when the expedition failed to track down snowmen in the vast Pamir mountains. Casting aspersion on the optimists' Western counterparts, Soviet media suspected Western Yeti expeditions to the Himalayas – a region that bordered on Soviet territory – of being little more than thinly veiled espionage.[362] Under these circumstances, Soviet hominologists wondered how they could justify their research? How could they continue their studies after the dissolution of the Academy of Science's commission on the snowman?

The situation Soviet Yeti enthusiasts found themselves in after 1959 was challenging, and the support they received from the Moscow Darwin Museum was

[357] ARAN f. 2 op. 6 d. 292, l. 107.
[358] ARAN f. 2 op. 6 d. 292, ll. 100-107; quote: 105.
[359] Marie-Jeanne Koffmann, "Reflections on the Possible Survival of a Population of Relict Hominoids in the Caucasus," in *In the Footsteps of the Russian Snowman,* ed. Dmitri Bayanov (Moscow: Crypto-Logos, 1996), 19-35, here: 21.
[360] V. I Ratsek, *Zagadka snezhnogo cheloveka* (Tashkent: Esh gvardiia, 1962), 91.
[361] Alexander Pronin, "Testimony by Alexander Pronin," in *In the Footsteps of the Russian Snowman*, ed. Dmitri Bayanov, (Moscow: Crypto-Logos, 1996), 81-83.
[362] Regal, *Finding Sasquatch,* 44; 143; Regal notes that the CIA does not release Yeti-related materials and suspects that "at the very least, a Western intelligence element existed alongside the search for the Yeti." Ibid., 51.

crucial. Having lost official support and funding made further investigation and publication on the matter difficult. Although their US colleagues struggled as well, they could and did turn for sponsorship to wealthy businessmen such as Tom Slick, whose family had struck it rich with the oil boom in the early twentieth century. In the Soviet Union, no private sector existed that could offer such support. In addition, the state's "monopoly of both science and book publishing" limited the hominologists' ability to disseminate their work.[363]

Although the Academy of Sciences terminated its support, some renowned scientists continued to be involved in hominology, contributing legitimacy and credence to the quest for the Yeti. Among them were the Darwin Museum's two most prominent researchers at the time, comparative psychologist Nadezhda Nikolaevna Ladygina-Kots and zoologist Petr Petrovich Smolin (1896-1975) who both showed great interest in the creature. Ladygina's research had involved a variety of species, but monkeys and apes had figured particularly prominently in her work – most notably the chimpanzees Ioni and Paris, and a macaque named Dezy. In 1960, the Biological Department of the Academy of Sciences tapped Ladygina, among others, to join the commission that was to evaluate how to further proceed regarding the question of the snowman.[364] Her expertise on primates inclined her to support this research. "[A]s a specialist on the behavior of anthropoides," she wanted to "direct attention to the fact that the testimonies of the witnesses that describe the appearance and manners (*povadki*) of the 'snowman,' who have never seen an ape and in all likelihood not read about them, contain a number of specifications that indicate the affinity of these mysterious beings to higher primates." The purported curiosity of the creature indicated its proximity to apes – or perhaps, Ladygina wondered, was the animal in question a "transitional form between higher primates and humans"?[365]

Ladygina's colleague at the Darwin Museum, ornithologist Petr Petrovich Smolin, became even more involved in hominology than Ladygina was. Smolin and Boris Fedorovich Porshnev entertained a longstanding friendship. Smolin's students at the youth section of the All-Russian Society for the Protection of Nature (VOOP) remembered that he encouraged them to meet his friend Porshnev to learn more about the snowman.[366] Smolin himself was among those well-respected scientists who were open to the hypothesis of living fossils. In a 1961 presentation he stressed that there was an abundance of folkloric evidence for the existence of the animal in the Caucasus, which, he argued, was closely related to humankind and "likely a Neanderthaloid."[367] When it came to the question of how best to find living specimens, he proposed to carefully evaluate the ecology of the creature, the plants and animals among which it would live in

[363] Dmitrii Bayanov, "Preface," in *In the Footsteps of the Russian Snowman,* ed. idem (Moscow: Crypto-Logos, 1996), 6f; Koffmann, "Reflections" 21.
[364] GDM f. 11 op. 1 ed. 1571 (KP OF 15111/1751), l. 2.
[365] GDM f. 11 op 1 ed. 1379 (KP OF 15111/1503), ll. 1f. Ladygina's interest in the snowman was sincere and some three to four years before her death (according to the Darwin Museum's archivist's estimation), she intended to contribute a chapter on the ape-like characteristics of the snowman based on published materials of the creature to an edited volume; the book, however, was never published. GDM f. 11 op. 1 (KP OF 15111/1379, ll. 1f.
[366] Nikolai Nikolaevich Drozdov, "Slovo o druge i uchitele," in *Zagadka 'snezhnogo cheloveka:" Sovremennoe sostoianie voprosa o reliktovykh gominidakh* (Moscow: Eksmo algoritm, 2012), 5-7.
[367] GDM f. 43 k. 5 ed. 52, l. 106; quote: Ibid., l. 106 ob.

the Himalayas, such as the pika, a close cousin of the rabbit.[368] Smolin was a well-respected researcher who brought his expertise to bear on the question of the snowman. As an important figure in environmental youth work and science education, he further popularized an already popular issue. With the founding of the Research Group in 1960 Smolin invited hominologists into the Moscow Darwin Museum and ensured that they could continue their research "unofficially." The research group attracted a regular crowd of circa 25 attendees and Smolin directed it until his death in 1975.[369] The hominologists met henceforth at the museum on a monthly basis, where they gather to this day. Their work still occasionally receives some public attention and they cooperate closely with their international peers, exchanging letters, welcoming Western cryptozoologists, discussing their work, and even publishing in Western media.[370]

Yet not only trained scientists and the institution of the Darwin Museum ensured the survival of hominology. From the very beginning, the pursuit of the Yeti was closely tied to mountaineering. After all, researchers initially suspected the creature to exclusively dwell in high altitudes and remote regions. Mountaineers participated in the expedition of the Academy of Sciences, led by Ustinov. The cooperation with mountaineers, among whom the educated elites were highly represented, became if anything even more crucial once hominologists lost the support from the state they had initially enjoyed.[371] A mountaineer who became a fixture of Soviet Yeti research and the Darwin Museum's Relict Hominoid Research Group was Marie-Jeanne Koffman, who had served as a medical doctor in the Academy's 1958 expedition. Having been deployed in the Caucasus during the Second Wold War, Koffman was stunned to hear in 1958 that there had been a sighting of "a creature of human appearance, male, covered with thick fur, and described as having a brutish expression" in the region in 1941. She was also transfixed by zoologist Satunin's 1899 report of a sighting of a similar creature, but of female sex. These reports were extraordinary because they stood in tension with the hominologists' initial assumption that snowmen lived in areas not populated by humans. To investigate the claims, Koffmann decided to travel to the Caucasus in 1959, which soon became a focus of Soviet research on the Yeti. She established a base in Kabardino-Balkaria at Mount Elbrus and conducted countless interviews with locals over the years.

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[368] ARAN f. 2 op. 6 d. 292, ll. 92-153, l. 114.

[369] Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 "Russian Letters," Letter Bayanov and Roderick Sprague, Head, Department of Sociology/Anthropology, University of Idaho, Moscow, Idaho, July 10 1976, 1.

[370] Bayanov, *In the Footsteps,* 7. Rene Dahinden (the Swiss-born Canadian) visited Moscow in 1971: Dmitri Bayanov, "Report by Dmitry Bayanov," in *In the Footsteps of the Russian Snowman,* ed. idem (Moscow: Crypto-Logos, 1996), 53-62, here: 62; the letter exchanges between Grover Krantz and his Russian colleagues date from the early 1970s onwards and D. Baianov eagerly let American cryptozoologists know that the members of the Relict Hominoid Research Group discussed the materials they received from the US at their meetings. Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 "Russian Letters," passim, and Letter Baianov and Roderick Sprague, Head, Department of Sociology/Anthropology, University of Idaho, Moscow, Idaho, July 10 1976, 1.

[371] According to Eva Maurer, members of academic institutions, especially students were disproportionately represented in mountaineering. The fact that the popular V. Vysotskii sang about mountaineering further enhanced an already existing reputation of mountaineering as an elite sport of intellectuals. Eva Maurer, "Al'pinizm as Mass Sport and Elite Recreation: Soviet Mountaineering Camps under Stalin," in Turizm: The Russian and East European Tourist under Capitalism and Socialism, edited by A.E. Gorsuch and D. Koenker (Ithaca: Cornell University Press, 2006), 141–162, here: 156f.

Through her interviews with informants, whom she portrayed as mostly "simple people," such as shepherds, reliable sources with great "knowledge of nature" and well-developed "faculties of observation," she was able to collect "hundreds" of reports of encounters with the snowman.[372] Yeti-witness Pronin praised Koffmann and her "self-funded expeditions" for having trained "almost all hominologists of the second generation, [Dmitrii] Bayanov and [Igor] Bourtsev included."[373] When Dmitrii Baianov went on his first expedition with Koffmann in 1964, "wild tourism" – tourism without a state-issued voucher and not organized by the state – was on the upswing in the Soviet Union. To travel independently was an important precondition for the work of hominologists, Ballowing them to pursue their research independently and outside of the highly regulated scientific institutions.[374]

Conclusion

Humans have long puzzled over the possible existence of intermediate species that straddle the human-animal divide, as the centaurs of Greek mythology remind us.[375] However, Darwin's theory of evolution doubtless fueled the debate – and imagination – regarding the (dis)continuities between humans and animals. The monkey and the missing link became potent symbols of Darwin's emphasis on humankind's proximity to nature. Vivid testimony to the excitement this aspect of Darwinism created is evident in the occurrences at Cambridge University in 1877, when Darwin was awarded an honorary Doctor of Laws Degree (LLD). Six years had passed since he had published the *Descent of Man*, and the hall of Darwin's alma mater was filled for a ceremony that quickly took a rambunctious turn. Emma Darwin reported to her son William that the hall erupted with "periodical cheering in answer to jokes which sounded deafening." The pranks peaked in "a monkey dangling down [from a rope] which caused shouts and jokes about our ancestors, etc. […] Then came a sort of ring tied with ribbons[,] which we conjectured to be the Missing Link."[376] The satire magazine *Punch* likewise poked fun at the missing link. In 1862, it argued that talking fish were the ultimate missing link. "Under certain circumstances and conditions of life," wrote the anonymous author, "an individual is described as getting 'pale about the gills' or being 'like a fish out of the water,' and that, according to Mr. Darwin's theory, in a sense more appropriate and profound than may generally be attached to the expression." The author concluded that "when we take these usages in connection with the fact that we lately had amongst us an

[372] It should be noted that these reflection of Koffmann were first published decades after the events, in 1991. Koffmann, "Reflections," 21-25.
[373] Pronin, "Testimony," 83.
[374] Baianov's first expedition to the Caucasus indeed took place under the guidance of Koffmann in 1964: Dmitri Bayanov, *Bigfoot Research: The Russian Vision*, compiled by Christopher L. Murphy, edited by Roger Knights (Surrey; Blaine: Hancock House Publishers LTD., 2011), 384. On tourism, see: Anne E. Gorsuch, "'There's No Place like Home": Soviet Tourism in Late Stalinism," *Slavic Review* vol. 62, no. 4 (Winter, 2003), 760-785, on wild tourism: 770.
[375] Blu Buhs, *Bigfoot*, 3.
[376] H. E. Litchfield, ed. Emma Darwin, A century of family letters, 1702-1896, volume 2 (London: John Murray, 1915), 230f. http://darwin-online.org.uk/content/frameset?pageseq=1&itemID=F1553.2&viewtype=text (03.10. 2018). John Maynard Keynes's father, Jon Neville Keynes, likewise remembers this incident in his diary: http://darwin-online.org.uk/content/frameset?pageseq=1&itemID=CUL-Add.7831.2&viewtype=text (03.10.2018).

actual live talking fish, it appears inconsistent with sound reasoning to doubt that the talking fish was the missing link […] and that the question as to our ancestry is thus decided."[377]

Extinction is a further crucial element of the theory of evolution. According to Darwin, the earlier forms have gradually evolved into later, better-adapted stages and generally became extinct. It would therefore be misguided to expect the transitional forms between, say, the modern horse and its earliest ancestors like the *Eohippus* that lived some 52 million years ago to roam the earth today. Due to the "extreme imperfection of the geological record," maintained Darwin, not all the intermediate forms that "must, on my theory, have formerly existed" are known and he warned that he himself had "found it difficult, when looking at any two species, to avoid picturing to myself, forms *directly* intermediate between them. But this is a wholly false view."[378]

Darwinian reservations against living missing links did not deter Yeti researchers to frame the purported being as living specimens of "missing links" while also insisting that their work should be considered serious science "in full accord with the work and aspirations of Charles Darwin."[379] The continued affiliation with the Moscow State Darwin Museum lent the Yeti researchers some trappings of a scientific status, although not comparable to the prestige of the Academy of Science's support they had enjoyed in 1958.

Pursuing niche research within a, by Soviet standards, unusually independent community of self-organized researchers, key hominologists dared to redefine what it means to be human. They broke with a concept, promoted under Stalinism, that emphasized labor and defined humankind as lording over nature. Perhaps it was befitting for hominologists to depart from the Stalinist Promethean tradition. Their research object was itself a wonderful example of the ways in which that mastery was lacking. After all, the Yeti continuously evaded researchers and purportedly represented an earlier yet extant relative of humankind, believed for the longest time to thrive in the wilderness, that is in regions untouched by the anthropogenic factor.

[377] Anonymous, "Our ancestry," *Punch, or the London Charivari* (22 November 1862), 209.
[378] Charles Darwin, *The Annotated Origin: A Facisimile of the First Edition of* On the Origin of Species, edited by James T. Costa (Cambridge: The Belknap Press of Harvard University Press, 2009), quotes: 121; 280 (emphasis i. o.).
[379] Smithsonian, National Anthropological Archive, Grover S. Krantz Papers, Series 5 (Sasquatch), Box 10, Folder 0347 «Russian Letters» - Letter of Dmitrii Baianov to Roderick Sprague, Head of the Department of Sociology and Anthropology, University of Idaho, Moscow, Idaho (July 10 1976).

Conclusion

This dissertation set out to examine the fate of Darwinian evolutionary theory through the history of the Moscow State Darwin Museum. The Bolsheviks' interest in Darwinism was guided by their devotion to materialism and an understanding of a close link between Marxism and Darwinism. Marx and Darwin, they maintained, provided the key to the laws of development in history and nature respectively. As a result, Darwinism was central to the Bolsheviks' revolutionary project. It was at the heart of the new society they sought to create, and they enlisted evolutionary theory as a weapon in their fight against the culture of Tsarist Russia with its religious underpinnings. Dedicated to the dissemination of evolutionary theory, the research carried out at the Darwin Museum thus had high political stakes. However, the story of Darwinism in Imperial and Soviet Russia, and of the Darwin Museum, was more complex than this narrative suggests. The museum's peculiar history, for one, with its ties to anthroposophy prior to the October Revolution undermined its claims of being a bastion of materialism, which it outwardly proclaimed after 1917. What is more, while evolutionary theory was supposed to foster a revolutionary society and culture, scientists and ideologues were troubled by Darwinian gradualism and wondered about the precise connection between Darwinism and Marxism. Did evolutionary theory, they asked, undermine the very idea of development by revolution? How could Marxism and Darwinism, that is, evolution and revolution, be reconciled?

Puzzling over the conundrum of evolution and revolution meant considering the relationship between nature and society in the broadest terms. To insist that humankind was separate from nature and that the laws of nature hence do not apply to history and society offered a way out of the problem Darwinism posed. In the Soviet Union, social Darwinism was definitively rejected. To conceptualize nature and society as independent ontological entities became the established position under Stalin, as historians have rightly pointed out. The authors of the Darwin Museum's exhibition as well as researchers working at the institution adopted this position. They even went so far as to discard key Darwinian insights. For example, scientists analyzing the question of how similar or different humans and animals are concluded that *homo sapiens* as a species is qualitatively different from all members of the animal kingdom. Thus were the findings of Nadezhda Ladygina-Kots (1889-1963), primatologist, comparative psychologist, and co-founder of the Darwin Museum. She argued that Darwin had erred in his suggestion that humans and animals differed in degree, and not in kind. The unique quality of humankind, agreed Soviet researchers with reference to Friedrich Engels, was the ability to engage in labor. Only humans were able to create and purposefully use tools, with the aim of transforming the environment according to their needs. Such an understanding of the place of our species in nature was not just a scientific-theoretical question. Insisting that humans are unique in that they are emancipated from nature and its dictates provided the conceptual basis of large-scale projects of nature transformation, which the Soviet Union with its relentless pursuit of industrial modernity undertook.

The Promethean aspiration to exercise control over nature and to transform the environment according to the needs of humankind was a prominent feature of Soviet culture. However, the work and research conducted at the Darwin Museum testifies to the

evolution of Soviet scientists' debate on the relationship to the natural world. First, as the 1960s progressed, the notion of humankind as the only tool-wielding animal capable of goal-oriented manipulation of the environment became undermined by studies on animal tool use in the wild. Yeti scholars (or "hominologists") affiliated with the museum, who argued that their work shed light on questions of human evolution and thus related to Darwin, closely followed this scholarship. Hominologists ultimately argued that labor was not the crucial, defining characteristic of humankind. Even though they maintained that *homo sapiens* had evolved a long way from the animal kingdom, thus confirming notions of human distinctness, their emphasis on language as opposed to tool use was a significant departure from Stalinism. It shifted the focus away from the transformative powers humankind yielded over the environment.

Second, the discourse on the transformative impact of humankind on the natural world came to acknowledge that mastery was not complete and that human meddling came at a cost. None other than Engels cast doubt on the prospects for success in the attempt to conquer nature: "Let us not, however, flatter ourselves too much on account of our human victories over nature," wrote Engels in his piece on the "transition from ape to man." Continuing, Engels said "for every such victory nature takes its revenge on us. Each victory, it is true, in the first place brings about the results we expected, but in the second and third places it has quite different, unforeseen effects which only too often cancel the first."[380] This particular passage of *Dialectics of Nature* does not appear to have been widely quoted, yet Engels' insights came to be widely shared in the late Soviet Union.

From the 1970s onwards, the Darwin Museum directed its attention to the unintended consequences of humanity's interaction with nature, focusing for example on the extinction of species.[381] However, not all considered this focus of the exhibition on humankind as a factor in evolution laudable, among them zoologist Iuri I. Chernov (1934-2012). In the mid-1980s, Chernov, a corresponding member of the Academy of Sciences, reviewed the Darwin Museum's plans for its new exhibition. Writing during perestroika, a time when environmental awareness reached unprecedented heights, especially after the incident at Chernobyl in 1986,[382] Chernov reproached the Darwin Museum for insisting that it was its duty to discuss ecology in depth because other museums neglect the topic. While he did not claim that there was no connection between Darwinism and ecology,[383] he demanded that the museum should be careful to not dilute "evolutionary problems with environmental issues" and should avoid succumbing to the latest fashion of "ecologization." Any mention of ecology should strictly serve the

[380] *Karl Marx Friedrich Engels Werke, vol. 20* (Berlin: Dietz Verlag, 1990), 452. Translation based on https://www.marxists.org/archive/marx/works/1883/don/ch09.htm (December 13 2018).
[381] The Darwin Museum worked for example on an exhibition on the "red data list" of endangered specie, first published in 1978. See GDM f. 19 op. 1 ed 697; nature protection was mostly framed as the rational use of resources. See f. ex. GDM f. 19 ed. 870, passim.
[382] Josephson, *Environmental History*, 254ff. For an account of the connections between nationalism and the ecological movement in Lithuania and Ukraine, and calls for local self-determination in Russia, see Jane I. Dawson's *Econatinalism: Anti-nuclear Activism and National Identity in Russia, Lithuania and Ukraine* (Durham: Duke University Press, 1996).
[383] For a discussion of Darwin as the "single most important figure in the history of ecology," see Donald Worster's *Nature's Economy: A History of Ecological Ideas, Second Edition* (Cambridge: Cambridge University Press, 1994) 114ff.

purpose of explaining evolutionary theory.[384] Instead of framing one section, for example, as "interaction of humankind and nature," he suggested a more appropriate approach would be to analyze "humankind as a factor in evolution." What Chernov apparently rejected was an activist stance on the part of the Darwin Museum.[385] Other reviewers, however, reacted with enthusiasm and wondered whether the planned section on the human interaction with the environment should not be enlarged. Death and destruction caused by humans needed to be analyzed, although the narrative should not be too pessimistic and the museum was urged to consider including information on how the environmental crisis could be amended.[386] While the Darwin Museum's connection with environmentalists ran deep, especially because of the influential youth work of Petr Petrovich Smolin, the ecological profile of the museum's exhibition became more pronounced towards the end of Soviet rule, climaxing in the 1980s.[387]

In conclusion, telling the history of Darwinism through the Darwin Museum leads down unexpected paths – the museum was influenced by anthroposophy and housed environmentalists and researchers who worked on comparative psychology, but also cryptozoology ("hominology"). The advantage of this approach is, however, that it offers insights into the breadth of the engagement with Darwin and the variety of approaches to one central question Darwinism raised. For what unites these seemingly disparate projects and research is the problem of defining humankind's place in nature. What was the relationship between the laws of human and natural history? How do humans influence evolution? Are we truly just an animal among other animals? In sum, the

[384] Environmental historians have highlighted that even amidst Stalinist industrialization, collectivization, and repression of opposition, nature conservationists continued their work and activism on behalf of the environment. They fought, among others, for nature reserves in which any human interference was prohibited (*zapovedniki*). In the 1960s, biology departments became hotbeds of environmental activism. Some students boldly sought to ensure the implementation of Soviet nature protection laws. Douglas Weiner, *A Little Corner of Freedom: Russian Nature Protection from Stalin to Gorbachev* (Berkeley: University of California Press, 1999). Weiner describes nature protection "as a means of registering opposition" while "remaining outwardly apolitical, and nature reserves (*zapovedniki*) as "geography of hope." Ibid., 4.

[385] The review is not dated but Gorbachev is mentioned, hence the document must be from 1985 or later. GDM f. 19 op 1 ed. 957, l. 1f; quote: Ibid., 2.

[386] "Humanity has currently accumulated so much material on the destruction of nature that it is easy to convince someone that everything has died already […]"GDM f. 19 op 1 ed. 957, l. 7.

[387] Petr Petrovich Smolin worked for the museum from 1939 to the Second World War and then again starting in 1949. He dedicated his life to the cause of nature protection. *Potomu chto ia ikh liubliu (PPS i VOOP): Posviashchaetsia Petru Petrovichu Smolinu* (Moscow: Tipografiia Rossel'khozakademii, 2008), 233; 240. Smolin helped draft Soviet Russia's first decree on nature protection, signed by Lenin: Ibid., 192. His influential biology working group (*kruzhok*) for the youth met regularly at the Darwin Museum. With his pedagogical work, Smolin sought to instill in the children "interest in nature, love for her, the desire to protect her wealth" Quote: Ibid. 204. Smolin was a dedicated pedagogue who spent, according to his wife, four evenings a week engaged with various groups and organized expeditions into nature on his weekends. Ibid., 208. He left a lasting impact in the life of his enthusiastic students, many of whom vowed to follow his example to love nature. A number became biologists in their own right. For a list of several notable graduates of Smolin's kruzhok: Ibid. 262. Reflecting on Smolin's impact upon his death, one 1975 obituary emphasized that "each of his students will keep a bright memory of him in their heart, and will continue the great work of nature conservation that he taught and to which Petr Petrovich Smolin dedicated his whole life." Quote: Ibid., 233.

Darwin Museum with its long history functioned as a key site for research, for shaping future generations of biologists and nature protectionists, and for negotiating the close but conflicted relationship between evolutionary theory with Bolshevik revolutionary ideology.

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