Why in Color?  
Sergei Mikhailovich Prokudin-Gorskiĭ  
and His Travels 1908–1918  
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In the introduction to their publication on nation building by photographic archives, Costanza Caraffa and Tiziana Serena describe that “the formation of photo archives in the service of a national idea may respond directly to a hegemonic project” and name Sergei Mikhailovic Prokudin-Gorskiĭ (1863–1944), with his “archive of color images of the Russian Empire created between 1909 and 1915,” as one of two examples.  

Prokudin-Gorskiĭ’s photograph of a group of people at Dinner During Haying at the Mariinsk Canal from 1909 (fig. 1) is not only shown as the cover illustration of their book but the image’s production, along with its partial destruction, are described on the blurb of the rear jacket.  

Prokudin-Gorskiĭ’s vast project of more than 5000 color photographs – of which 2615 have survived in the Library of Congress in Washington, D.C. – has gained interest all over the world since its retrieval in the late 1970s. In Germany, the exhibition Farbe im Photo, dealing with the history of color photography, displayed Prokudin-Gorskiĭ’s work and was followed by an increasing number of publications about color. But none of these publications explain why this logistically and financially exhausting project had been performed in color.

This article sheds light on the subject through two lines of inquiry. Although there is no single unifying goal to explain all of Prokudin-Gorskiĭ’s lengthy travels and to account for his massive body of work, this article seeks to explain some aspects of the motivations and realizations of the photographer’s vast and tiring task of documenting the last years in Tsarist Russia. It does so, as a start, by shedding light on his personal relation to the Institute of Photo-chemistry, Photography and Spectral Analysis at the Königlich technische Hochschule zu Berlin (Royal Technical University in Berlin) where he received a formative education in three-color photography. The article then addresses the role played by his photograph of the author Lev Tolstoy (1828–1910) as his calling card in important political circles, and also presents and reports on his numerous travels connected with surveillance and propaganda.

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2 — <https://www.loc.gov/item/2018678989/> (08.09.21).
5 — The vast literature on Sergei Michalovic Prokudin-Gorskiĭ and his photographs concentrates on the aspects of the subjects chosen and on the technical history of the plates’ restoration; both do not play an important role here. Cf. William Craft Brumfield, Journeys Through the Russian Empire, The Photographic Legacy of Sergey Prokudin-Gorsky, Durham 2020.
International connections: Prokudin-Gorskii in the German Empire

Several details of Sergei Mikhailovic Prokudin-Gorskii’s biography seem to be difficult to research and are therefore subject to speculations of all sorts. Born in 1863 and having had a formal education that allowed him to study both chemistry and the arts at the university, he married Anna Alexandrovna Lavrov, the daughter of the steel magnate Alexander S. Lavrov (1838–1904), in 1890. Lavrov made his son-in-law executive board director of the state-owned Imperially Appointed Association of Gatchina Bell, Copper Smelting and Steel Works, a position Prokudin-Gorskii held from 1890 until the October Revolution in 1917. Around the time of his marriage and installation in this position in the early 1890s, Prokudin-Gorskii might have spent some time in Berlin in order to study chemistry. But he could not have studied with Adolf Miethe (1862–1927) in person at that time since Miethe only became a professor of photochemistry at the Berlin Technical University after Hermann Wilhelm Vogel’s (1834–1898) death in 1898, and not before. If Prokudin-Gorskii had studied with a scientist as well-known as Vogel (renowned for his sensitization of the orthochromatic plate), he surely would have stated that proudly.

There is no sign of Sergei Mikhailovic Prokudin-Gorskii having a deeper interest in photography until the late 1890s when he joined the national association for amateur photographers. In 1901, he opened a photographic and, more importantly, a photolithographic studio in St. Petersburg where his family lived. In the summer of 1902, he undertook a six week internship at the Institute of Photo-Chemistry, Photography and Spectral Analysis at the Königlich technische Hochschule zu Berlin and became familiar with Miethe’s and his assistant Arthur Traube’s (1878–1948) efforts in finding color components to add to the regular black-and-white photographic material in order to sensitize it for true color perception – the panchromatic film, which they were experimenting with at the time. Shortly thereafter, Miethe started to photograph German landscapes on commission of the Ministry of Agriculture that wanted to present the Empire’s nature and forests at the 1904 World’s Fair in St. Louis in the USA by projecting large three-color images. After this internship and his return to St. Petersburg, Prokudin-Gorskii seems to have been busy with experiments in color photography of his own with his first article on the subject appearing on 13 December 1902. Around the same time, he founded and became editor-in-chief of the Russian journal *Photography Amateur*, and obviously began performing color photographic experiments in his home town of St. Petersburg (fig. 2).

The next key moment in Prokudin-Gorskii’s career in color photography is his attendance at the 6th International Congress of Pure and Applied Chemistry in Rome on 27 and 28 April 1906, where he delivered a paper on color photography, as well as one on photography in Russia. Supposedly, he had used the occasion of visiting this *Verfahren zur Herstellung panchromatischer Trockenplatten*, DRP 142 926, 1902 (Arthur Traube and Adolf Miethe).


7 Verfahren zur Herstellung panchromatischer Trockenplatten, DRP 142 926, 1902 (Arthur Traube and Adolf Miethe).


9 Minakhin, Garanina 2003 (reference 6), note 19, 8, note 4.
conference to travel through Austria and Italy as there are a number of color photographs of these countries in his collection, already in the format employed for his subsequent photographs of Russia.\(^\text{11}\)

A closer look at the digital reconstructions shows that the photographer had not perfected his equipment nor his photographic emulsion: In terms of equipment, the three frames needed for making three-color separation negatives did not overlap perfectly, which is due to the speed of the three exposures necessary for the three negatives and relation to the movement of the object. This is a mechanical problem that was easily solved by good craftsmanship as Adolf Miethe had done with his camera, working with the Berlin manufacturer Bermpohl on a three-color camera with a repeating back that required a single click for all three photographs. Prokudin-Gorskiĭ used a similar camera model with a vertical slider that was made, based on his specifications, in St. Petersburg.\(^\text{12}\)

The photographic emulsion he used for these negatives was not yet sensitive enough to allow full-color depictions of human beings in the images.\(^\text{13}\) The sensitivity of the negative black-and-white plates, which were supposed to go behind the appropriate color filters also needed to be increased. The only one able to cope with this problem would have been Arthur Traube who had left the Berlin Institute in late 1904 and became the technical director of the Perutz film company.\(^\text{14}\) But there is no surviving correspondence between Prokudin-Gorskiĭ and Traube, or with the Perutz company.

After his first presentation of his three-color photographs in 1906, Sergei Mikhailovic Prokudin-Gorskiĭ seems to have tested his methods throughout that and the following year, employing a fast-moving cassette inside his camera for his three-exposure negatives, and also trying to improve the sensitivity of his emulsions independently of what German photographers were doing. The results can be viewed when looking through lot 10333 of his heritage in the Library of Congress.\(^\text{15}\)

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10 \text{Minakhin, Garanina 2003 (reference 6), note 19, 8. Cf. Emanuele Patern, Gerolamo Vittorio Villavecchia (ed.), International Congress of Pure and Applied Chemistry (6th 1906 Rome), Atti del VI Congresso internazionale di chimica applicata, Rome 1907, 4 vols. The author was not able to trace Prokudin-Gorskiĭ’s contribution in these volumes.}

11 \text{Library of Congress, Prokudin-Gorskiĭ Collection, Lot B10333: Miscellania and Etudes.}

12 \text{Adolf Miethe, ‘Dreifarbenphotographie nach der Natur’, in: Enzyklopädie der Photographie, vol. 50, Halle an der Saale 1908, 25–34. The ray-dividing camera described in this chapter was not produced before the late 1920s due to technical problems.}


14 \text{Gert Koshofor, Farbfotografie, vol. 1, Munich 1981, 139.}

15 \text{<https://www.loc.gov/collections/prokudin-gorskii/?fa=partof:lot+10333> (11.09.21).}
the photographs from Italy, Switzerland (___fig. 3), and the Danube, there are product photographs of Etruscan vases at the Hermitage Museum of St. Petersburg, some scenes from another holiday in Ukraine and on the Crimea, and a number of images of gardens.

Two or three scenes employ live models as Prokudin-Gorskiï realized that his methods were not interesting without depicting human beings. For photographs of people, the sensitivity of the emulsions had to be raised as this alone could allow shorter exposure times – a difficult task considering just how thin the emulsion layers must be for the color projection. At this time, Adolf Miethe had to face problems with false imitators of his methods misusing his name for simple hand-coloring; with satisfaction, he saw that these forgers were prosecuted by the law.16

Therefore, Prokudin-Gorskiï researched new developments in color photography and applied them to his personal work, finding his own method of sensitizing his plates. He also did not have to fear any troubles with copyrights as the Russian Empire had never joined any international copyright law commission; there was a bi-lateral contract between Russia and Germany on patent and copyright claims in 1904 but this was never followed by legal action.17

On 19 July 1907, Sergei Mikhailovic Prokudin-Gorskiï writes a letter to Erich Stenger who had replaced Arthur Traube as Miethe’s assistant, and who the Russian photographer seems to have met in Berlin the year before.18 Stenger had just published his first article in the field of photography and, supposedly, Prokudin-Gorskiï was eager to have it translated and published in Russian in his own magazine in order to maintain his international connections to the German Empire after having left it.19 Both agree in criticizing the Lumière Autochrome process as insufficient and unpractical for printing and projecting. The letter refers to new processes but does not specify them; allegedly, these processes are photographic and have to do with color sensitivity as Stenger was publishing about this subject together with Miethe and the pharmacologist Louis Lewin.20

18 Prokudin-Gorskiï, Sergei Mikhailovic: Letter to Erich Stenger, handwritten, in the Stenger Collection, Museum Ludwig, Cologne. Thanks to Miriam Szwast and Hanin Hannouch.
It must have been around this time that Prokudin-Gorskiĭ was getting ready to pitch his project to map the Russian Empire to those who could finance it – especially to Tsar Nikolai II (1868–1918) – and he used his photograph of Russia’s famous author Lev Tolstoy (1828–1910) as his calling card.

**Picturing Tolstoy**

At many times throughout his life, the author Lev Nikolayevich Tolstoy became a subject of admiring visitors at his estate at Iasnaia Poliana and, of course, of both amateur and professional photographers.\(^{21}\) Prokudin-Gorskiĭ wrote a letter to him on 23 March 1908, asking for permission to visit him and take his portrait and whatever drove him to do so was genius, since such a photograph was the best possible promotion for his ideas of making color photography famous.\(^{22}\) Prokudin-Gorskiĭ’s pretext for taking the photograph was that he was wanted to outperform a competitor, which was a way of advertising his own methods and results. Another reason he could trust was the vivid interest of Tolstoy’s wife Sophia Andreyevna Tolstaya (1844–1919) in photography, both as a practicing amateur and as a model accompanying her husband.

He was granted permission to visit and, on 23 May 1908, Prokudin-Gorskiĭ was able to produce two portraits of Tolstoy, one seated in his garden, the other in his studio. During his two day stay at Iasnaia Poliana, Prokudin-Gorskiĭ took ten photographs: all of them survived as black-and-white proof prints in the albums that the photographer used for his archives, and two are held at the Library of Congress as three-color separation negatives which were created through digitalization in 2000.\(^{23}\) A closer look at these negatives shows that Prokudin-Gorskiĭ was still struggling with the sensitivity of his emulsion and with the exposure: The peasants sitting in one image are not depicted properly due to some movements, while the water in both images shows some effects of blurring (\(^{\text{fig. 4}}\)). All the other images of the photographer’s visit to the author are visible in black-and-white and – considering the difficult conditions of exposure under subdued light as in Tolstoy’s studio – they are astonishingly well-focused (\(^{\text{fig. 5}}\)).

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\(^{23}\) <https://www.loc.gov/pictures/collection/prok/digitizing.html> (12.09.21). The collection including the photographs of Iasnaia Poliana and Tolstoi are in the lot 10333.
Л. Н. Толстой в кабинете

Дом Л. Н. Толстого

Пейзаж на деревне
On 27 May 1908, Prokudin-Gorskiĭ wrote another letter to Tolstoy thanking him for the time he had lent him and promising to deliver satisfactory results during his next visit to the area that was scheduled for August 1908. Whether this visit took place or not is not documented, but in August 1908, the journal *The Proceedings of the Russian Technological Society* was published with a photomechanical reproduction of Tolstoy’s portrait seated on a chair in his garden, dressed in the washed blue gown of a Russian peasant – just in time for Tolstoy’s 80th birthday on 9 September 1908. It was followed by a picture postcard from Prokudin-Gorskiĭ’s printing press in St. Petersburg that must have sold thousands of copies, and which is the source of all of today’s reproductions of this black and white image (fig. 6). Thus, the question has to be left open as to how the colors came into the photo-mechanical reproduction of the Tolstoy postcard – it could have been a chromolithograph.

The success of the Tolstoy postcard was followed by widespread acclaim and initiated the well-prepared fame of Sergei Michalovic Prokudin-Gorskiĭ. The next step was an invitation to the imperial court in January 1909 where he was granted permission to present a slide projection of the images he had so far managed to produce. The Romanov emperors had always been open for technical progress, and Tsar Nicholas II was especially keen on photography; he was an active amateur photographer himself, and even produced his own Autochrome color slides. The procedure and result was similar to presentations Adolf Miethe was giving at the time in Berlin. Miethe was so proud of this result that he gave a special lecture about color photography on the occasion of the emperor’s birthday.

### Traveling in Imperial Russia

Prokudin-Gorskiĭ had to convince the Tsar of the fact that his three-color photographic technology was the best for any kind of industrial, printable, and publishable use. Russian nobles had tested the Lumière’s Autochrome, and they knew that Autochromes could only be looked at through viewers like a peep show item or in a form of an equally time-bound projection. At the time, they were still only printed in an experimental fashion. So here comes the Russian photographer with his large projector with three bulbs, with glass negatives, and with a precision in his imagery hitherto unknown (at least, for those who had not seen anything by Adolf Miethe before) offering a better solution. It was relatively easy to convince the Tsar and his entourage of the obvious advantages of Prokudin-Gorskiĭ’s procedures: The color photographs showed far more details than the Autochromes, were more easily printed and could thus be hung on walls; most importantly, they were reproducible which meant that nobody had to fear legal action being taken by the brothers Lumière for their use and dissemination in Russia.
A hint from the Tsar always led directly to commissions from one of the administrative bodies – be it a ministry or other state organization – and, by the spring of 1909, Prokudin-Gorskiĭ had been offered a number of assignments that he was eager to fulfill as soon as possible. The Ministry of Transportation contracted him to take photographs of the Mariinsk Canal (fig. 7) and some regions of the Ural Mountains in 1909, he traveled twice on the Volga River in 1910, the Oka River in 1912, and the Murmansk Railway in 1915. What was supposedly a direct commission from the offices of the Tsar to depict the battlefields of 1812 (the centenary of which was rapidly approaching) was executed in 1911. It could be that Prokudin-Gorskiĭ also documented examples of Russia’s immense medieval culture while he was on this tour. This journey was coupled with his plans to establish a museum – or, at least, a department of the Hermitage in St. Petersburg – for the presentation of his photographs in print or as projection; a plan that was abandoned in September 1911 by the assassination of Peter Stolypin (1862–1911), Russia’s prime minister who had been a constant promoter of Prokudin-Gorskiĭ’s work.

The diminishing support of the administrations for the growing documentation did not stop the photographer. In his position as the managing director of the state owned steel mills, he could travel through the industrial regions of Yekaterinburg and lower Siberia; as a tourist he might have traveled the Caucasian mountains and Georgia, and the journey to the province of Turkestan – today Turkmenistan and Uzbekistan – could have been driven by economic interests in the modernization of the area encouraged by Alim Khan (1880–1944), the emir of Bukhara (fig. 8) who had been installed as province governor after the death of Konstantin von Kaufmann (1818–1882). His portrait counts among the most prominent photographs taken on Prokudin-Gorskiĭ’s travels.

Given the length, complexity and the various political stakes in his travels, an overarching objective accounting for all of his expeditions is hard to determine. Whatever goal he had – and given the fact that he worked in the field of color photography and film until his death – financial interests and personal gain must have played a decisive role.

Also, as complex as his photographic work was, Prokudin-Gorskiĭ needed support and accommodation from administrative personnel. While this is usual for nearly any photographer in the world, given the country’s vastness and the complexity of the administration controlling it, it is even more crucial when traveling through

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Fig. 6

The Russian Empire at the time was a unified state of many ethnic groups whose Emperor had borne the Cesarian title of ‘Tsar’ since the reign of Ivan III at the turn of the 15th to 16th century.\footnote{Michael Kort, A Brief History of Russia, New York 1980, 24–45.} From that point on, the imperial administration favored and commissioned travels of control and for prospecting; e.g. for extractive resources performed by the British Muscovy Company in the 16th century, which were followed by the Hanseatic expeditions of the late medieval times. Also, the first person to be personally commissioned by the Habsburg Emperor Charles V (1500–1558) to travel to Russia was the diplomat Siegmund Freiherr von Herberstein (1486–1566) who published the itinerary of his 1516/17 and 1525/26 travels years later in 1557. These early travelers were followed by dozens of merchants, diplomats, and adventurers whose books fill libraries.\footnote{Martin Aust, ‘Russland und Europa in der Epoche des Zarenreiches (1547–1917)’, in: EGO 2015. <http://ieg-ego.eu/de/threads/europa-und-die-welt/wissenschaft/martin-aust-russland-und-europa-in-der-epoche-des-zarenreiches-1547-1917> (26.10.21).} Even Alexander von Humboldt, who had his six months of travels through Russia and Central Asia paid for by the Tsar Nicolai I, opened his long account of this tour with a three page acknowledgment to “Votre Majesté Impériale” without naming him.\footnote{Alexandre de Humboldt, Asie Centrale. Recherches sur les chaines de montagnes et la climatologie comparee, Paris 1843, vol. I, VII–IX. Cf. Ottmar Ette, Alexander von Humboldt und die Globalisierung, Frankfurt am Main 2019, 319–264.} Obviously, Humboldt did not travel with a draughtsman as he did in America; the only illustrations of his books are a few maps at the end of volume three. Twenty years after Humboldt, photography became an important illustrative instrument in the Crimean War (1853–1856) which pitted the Ottoman, French and British Empires against the Russian Empire. It became the first armed conflict that could be named a „media war“, with photographers, illustrators, and lithographers on both sides of the battles, generating competing visual narratives.\footnote{Ulrich Keller, The Ultimate Spectacle: A Visual History of the Crimean War, Amsterdam 2001.} The next step in depicting commissioned travels through Russia was taken by the Georgian photographer Dmitri Ermakov (1846–1916) who started his career as an embedded war topographer and photographer in the Russo-Turkish war of 1877/78. After this engagement, he traveled throughout large areas of the Caucasian and Central Asian regions of the Russian Empire, always on military and state commissions.\footnote{John Hannavy (ed.), Encyclopedia of Nineteenth-Century Photography, London 2008, 494–496.} The remnants of his vast work – sources credit him to more than 10,000 negatives – are scattered over a number of museums and have been awaiting sincere consideration.

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fig. 7
Sergei Michalovic Prokudin-Gorskiĭ, Bridge over the river Msimta near the shores of the Black Sea, 1909, postcard. © S.M.Prokudin-Gorsky Museum Moscow.
fig. 8
fig. 9
Sergei Mikhailovich Prokudin-Gorskiĭ,
On the handcar outside Petrozavodsk on the Murmansk railway (self-portrait),
1915, three-color separation, digital color composite from digital file from glass negative 7.9 × 7.9 cm. Prokudin-Gorskiĭ photograph collection, Library of Congress, Prints and Photographs Division.
for several decades. Later, the Soviet Union also financed numerous travels, novels, and books on the largeness of its territories.

We are well-informed about Prokudin-Gorskiĭ’s travels through a number of sources but he was neither the first nor the last to undertake long journeys through Russia and deliver material that was later used for administrative surveillance, imperial pleasure, and foreign propaganda.

One of his most reproduced images shows him on a handcar surrounded by a number of men (fig. 9). The photographer is sitting beside a military officer who holds the brake, and there are four men in the back responsible for moving the vehicle; on the far right one can spot the little town of Petrozavodsk. The scenery looks bright and pleasant – which is why this photograph is the opener to most of Prokudin-Gorskiĭ’s exhibitions – but takes on a different meaning after a closer look: Judging by their uniforms, the four men in the back of the handcar are, probably, Austrian or Hungarian prisoners of war who had been enslaved and used as laborers for building the Murmansk Railroad – the world’s most northerly. For military reasons, this railroad had to be constructed extremely quickly, was laid out very simply on poor ground, and 25,000 of the 60,000 workers involved lost their lives.

The photographer had taken part in eleven of these expeditions, producing photographs both in color and in black-and-white between 1909 and the summer of 1915; they include numerous self-portraits, but no photograph depicts a situation as clearly contentious as this one. It was taken during the last of Prokudin-Gorskiĭ’s expeditions when he traveled along the erection of this important installation during World War I, commissioned by the Tsarist Ministry of Transportation that wanted to document the progress of its projects in the best possible light. Therefore, it differs greatly from his Tolstoy portrait in composition, intention and subsequent use.

The uniqueness of his efforts is not only the result of the choice of his subjects, which has been described often enough by researchers over the last two decades, nor does it rely on how the photographs were taken in color using three-color photography as practiced by Adolf Miethe and following an iconography similar to Miethe’s photographs of German forests. The distinctiveness of Prokudin-Gorskiĭ’s work lies in the fact that we do not know exactly what unifying purpose these images were intended to serve: Some of them had been projected to the Tsar in early 1909, while others had been used for color lithographic processing and printing as postcards. Maybe

40. Miethe 1908 (reference 12), 75–82. Stollwerck 1905 (reference 8).
the idea of printing the color photographs in books was also discussed, since many German books on the imperial colonies were published around 1907. Still, there is no overarching concept that explains what Sergei Mikhailovich Prokudin-Gorskiĭ had in mind when he started his huge documentary project. At best, we can – and should – ascertain the trajectory and context of individual photographs. They form a multitude of pictures of Russia in the first decade of the 20th century instead of a single homogeneous whole.

**Conclusion**

Historians Robert H. Allshouse and William Craft Brumfield, among others who have written about Prokudin-Gorskiĭ’s huge documentation on Russia before World War I, have observed that there are three motifs into which the collection could be divided: historical monuments, rural life, and industrial development (including transportation on rail and water), as well as a small number of portrait studies; e.g., of entrepreneurs and politicians. Transportation routes, historical monuments, the narration of battles and other military events, and idyllic scenes from the countryside have formed the basis of feudal self-representation since Louis XIV of France and been part of the iconography of Gobelin tapestries since Charles Le Brun. Sergei Mikhailovic Prokudin-Gorskiĭ’s project should be inscribed within such narratives. Today, we see these images as documents of the country at the time, but they were made as political propaganda for one of the last feudal systems on the European continent. Also, despite Brumfield’s claim that Sergei Mikhailovic Prokudin-Gorskiĭ “seems to have been resolutely apolitical and concerned primarily with the development of Russian science in his area,” there is no reason to argue that the photographer was interested in the less privileged social classes of his country, or that he had any interest in changing the situation of the poor and miserable, as other photographers at the time did. Although Sergei Mikhailovic Prokudin-Gorskiĭ’s archive fits into the tendency of the first decade of the horrible 20th century of showing the world as being beautiful and colorful, worth preserving from the terrors of war, his message is only a peaceful one up to a point. Also, his disinterest and reluctance to understand the 1917 revolution constitutes, at least in part, a reactionary political position that ran in parallel to him showing the splendor of Tsarist Russia in color and using color photography in order to move (émouvoir) the audience and to provide him with a prosperous career. As complex as his archives are, we are thankful that such a unique collection has survived.

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41. Cf. Hanin Hannouch’s article in this issue on pages 56–73.
44. Craft Brumfield 2020 (reference 5), 32.