

19th Century Cotton Cultivation: Russian Turkestan and the United States

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Introduction

Throughout the 19th century, the Russian Empire struggled to industrialize and achieve economic parity with its European counterparts to the west. Many other states in Europe were well on their way to industrial, capitalist economies; Russia, however, lagged behind, burdened by the outdated institution of serfdom and a lack of industrial technology and investment. This is not to say that Russia had no industrial economy of its own; it was merely underdeveloped. By the mid-19th century, Russian light industry, particularly in textiles, was the exemplar of Russia's potential for industrialized economic development. Textile production offered a stepping-stone, in theory, from the predominantly agricultural serf economy of Russia to an industrial manufacturing economy on par with the other nations of Europe. In the latter decades of the 19th century, the Russian Empire embarked on a series of conquests in Central Asia, spurred by the economic opportunism of accessing cotton fields in Central Asia. This need for cotton arose when, thousands of miles away, the American cotton trade with Europe was halted by the American Civil War, ultimately encouraging Russian military expeditions into Central Asia.¹ Despite the boon of resources from what became Russian Turkestan, the attempt to depart from reliance on imports of foreign cotton constrained Russia's textile industry in concert with protectionist policies and poor economic practices in the late 19th century. The rapid recovery of the American cotton economy after the Civil War and the limited production capacity of Turkestan for the Russian market in the late 19th century kept Russia reliant, to an extent, on imports from America. As a result, Turkestan cotton maintained a limited, though by no means insignificant, position in the Russian national economy, a role which persisted despite mercantilist tsarist policies practiced into the 20th century.

Methodology and Literature

The agricultural and pastoral territories of the Central Asian basin long served as a gateway from Europe to Asia, and vice-versa, reaching back to the campaigns of Alexander of Macedon. The vast, if somewhat arid, expanse of the Eurasian steppe served not only as an ideal route for trade caravans and conquering armies, but also for the cultivation of grass crops, herding livestock, and most importantly, the growth of cotton. Via traditional imperial-colonial relationship, cotton grown and harvested in Central Asia was shipped back to industrial centers in European Russia like Moscow, Ivanovo, and Nizhnii Novgorod to be manufactured into finished goods. Textile production represents the earliest and most advanced industrial development in the Russian national economy. This light industry allowed for gradual integration of traditional agricultural practice and the developing trend of cottage manufacture into the earliest manifestations of Russian industry. The nascent textile industry boomed in the 19th century with the addition of cotton to the resource pool, the import of advanced industrial technology from Western Europe – primarily England – and the rise of the first class of skilled industrial workers in Russia.

The case of Turkestan presents a fascinating narrative when observed alongside the growth of the cotton textile industry in Russia proper. Cotton had been grown in Turkestan for centuries, even millennia before the Russian conquest of the late 19th century. However, poor-quality raw materials and undeveloped agricultural techniques required significant attention after the Russian conquest before the region could be effectively integrated into the national economy. What is important to note is that the Russian textile industry of the 19th and early 20th centuries was not largely export-oriented, other than some exports to China and Persia.² Russia at the time sought economic self-sufficiency, resulting in a degree of economic stagnation in an age of industrialization and capitalism in Western

Europe. By analyzing Russian and global data from the second half of the 19th and early 20th centuries, one can extrapolate and draw conclusions regarding the economic agenda of the Russian empire and the significance of Turkestan to the national economy. In this analysis, the following factors will be addressed: the role of property rights and agricultural practices in Turkestan before and after the conquest; the impact of Turkestan on Russian domestic cotton production; the extent of the Russian textile industry's reliance on imports of American cotton; and the impact of the American Civil War on – and subsequent recovery of – the global cotton market as concerns Russian industrial growth.

A number of sources provide useful information and analyses on this otherwise elusive subject. Chief among these is Peter Lyashenko's exhaustive *History of the National Economy of Russia to the 1917 Revolution*, which provides invaluable data and narratives on all aspects of the Russian economy, and is widely cited by scholars in this field. Also invaluable are Richard Pierce's *Russian Central Asia 1867-1917*, Peter Gattrell's *The Tsarist Economy 1850-1917*, and Arcadius Kahan's *Russian Economic History*. Each of these texts offers figures and perspectives on all aspects of Russian economic history, not least the cotton industry. Additionally, Helene Carrere d'Encausse's work on the conquest of Turkestan, John Whitman's article on Turkestan cotton, and David MacKenzie's comprehensive analysis of Turkestan's role in the Russian empire fill in the analysis with historical accounts of developments, economic and otherwise, in 19th and 20th century Turkestan.

Historical Review

A complete understanding of the impact of Turkestan cotton on the Russian textile industry first requires an examination of the greater Russian textile industry in this historical period and the economic structure in place before and after the Russian conquest of the late 19th century. Textile manufacture was one of the earliest industrial developments in Russia, originally rooted in the institution of peasant serfdom. Woolen products and linen, spun from flax, constituted the "old" industry, spanning cottage-style peasant production – *kustar* in Russian – and larger, manorial enterprises employing mainly serf labor; these operations were particularly common in Moscow and the surrounding provinces.³ Merchants at this time had also begun to establish their own linen ventures,

though these decreased steadily in number between 1800 and 1850. Peter Lyashenko explains this as resultant of intricate circumstances and issues in production, and both domestic and international markets. Wool, as another older institution of textile production, was long-rooted in the feudal serfdom that persisted in Russia well through the 19th century. Quite literally a homespun craft for much of history, Russian merchant enterprises eventually emerged alongside the dominant nobility-owned manufacturers, producing "a more valuable grade of goods and working largely for the open market."⁴ Both linen and wool manufacture began to decline by the mid-19th century as a result of both unskilled serf labor – more so in the noble enterprises, but in merchant ventures as well – and extreme technical backwardness resultant of the feudal structure of the economy and lack of technological innovation.

In the 18th century, cotton began to take hold as the dominant material for industrial production. Like linen and woollens, cotton spinning and weaving in this early period was heavily based around *kustar* manufacture, the only real alternative to the monopoly operations controlled by the English industrialists Chamberlain and Cozzens.⁵ At this point the Russian textile industry was still dependent on finished, imported yarn from England, and industrial weaving capital at this time was most heavily concentrated Ivanovo, Moscow, and Vladimir.⁶ Ivanovo in particular became extremely important in the Russian textile industry, eventually earning the moniker "the Russian Manchester." In the early 19th century, Russia's first domestic spinning mills were established, while from 1810-1850 imports of raw and spun cotton increased significantly.

Lyashenko makes specific note of the fact that cotton was the first industry to operate highly independent of serfdom. *Kustar* operations were central in the development of what he terms "the first cadres of technically trained workers not connected with serfdom, who were gradually changing into professional industrial workers."⁷ By 1825, roughly 97.4% of labor in the cotton industry was hired (non-serf) labor.⁸ These operations were true to the definition of cottage industry, as enterprise owners bought raw cotton or yarn wholesale and then distributed it to various workshops and homes for the different stages of processing. While cotton textile manufacturing was still highly dependent on unskilled manual labor, this did allow for the eventual development of

skilled labor, to which Lyashenko refers, to occur. Supplementing the critical growth of this skilled, albeit small, labor class, industrial capital played an important role in the early development of Russian cotton. While linen and woolen fabric manufacture was always limited by a simple lack of sufficiently advanced machinery, English technology was incorporated into the Russian system of production following the Act of 1842, which lifted the ban on export of English cotton machinery.⁹ This allowed Russian producers to purchase the advanced English machines, and thus import raw cotton to spin themselves – mostly from America – rather than the more expensive spun yarn on which they had previously relied.

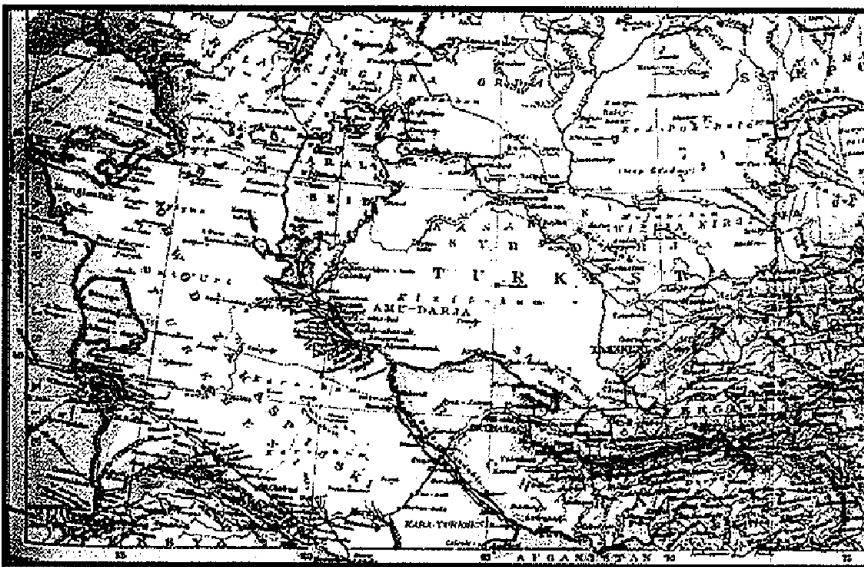
With the outbreak of the American Civil War and subsequent blockade of Southern ports, Russia's supply of cotton imports was almost completely cut off. This, in conjunction with British ambitions in India and Afghanistan, motivated the Russian government under Tsar Alexander II to pursue territorial ambitions in Central Asia in order to gain access to what had long been a cotton-producing region. The key dates associated with this process were: Gen. M.G. Chernyaev's capture of Tashkent in 1865;¹⁰ the combined effects of Gen. K.P. von Kaufman's

M.D. Skobelev's subsequent 1876 conquest and reorganization of the territory into Fergana under his own governor-generalship.¹³ Note that the conquest was not completed until more than 20 years after the American Civil War ended and cotton shipments were able to continue. By the end of the 19th century, Russian Turkestan encompassed parts of modern-day Turkmenistan, Uzbekistan, and Kazakhstan; it stretched from the Caspian Sea, west and north to the Bokharan and Khivan protectorates, and south to the border regions with Afghanistan and Persia. For thousands of years, the peoples of west Central Asia had maintained a blend of nomadic-pastoral and sedentary agricultural lives. The agricultural system encountered by the Russians upon conquest was based on, according to Lyashenko, two main factors: the system of land ownership already in place, and the irrigation techniques which had been employed there for hundreds, if not thousands, of years.¹⁴

Lyashenko's overview of the status of Turkestan land ownership before the mid-19th century explains conditions as resulting from the lack of property rights under Sheriyat – or Sharia – Islamic law.¹⁵ Debates of the interpretation of Sharia aside, property rights as Lyashenko explains them are based on the traditional model of property rights in

Islamic societies, where land is divided into three categories: "land belonging to the state (*amlyak* [or *āmlak*]) ... privately owned land (*myulk* [or *mulk*]) and ... land of the religious organizations (*vakuf* [or *waqf*])."¹⁶ Ian Murray Matley expands greatly on this basic framework, including different tax policies and inheritance practices. *Mulk* land constituted about 90% of irrigated land, leaving the remaining 10% for the ruler and religious organizations.¹⁷ *Mulk* land was further divided into different parcels for tax purposes: *mulke-i hurr* land paid no tax; *mulke ushri* paid 10% tax; and *mulke-i khiraj* paid 14-50% of the harvest in tax to the local *bek*, or regional governor.¹⁸ While in theory all land, including the *mulke*, belonged to the khan, emir, etc., land could be sold or inherited. Closely tied to land rights

and perhaps more importantly, water management played a critical role in the arid Turkestan basin. Water, seen as a gift from God and therefore no man's possession, was distributed at the village level by a controller, who was in turn supervised by an



Transcaspia, including Turkestan, in 1903. *S. Orgelbranda Encyklopedia Powszechna z ilustracjami i mapami*, 1898-1904

military expedition and internal instability, necessitating the emir of Bokhara's capitulation to Russian rule in 1872;¹¹ the declaration of Khiva as a Russian protectorate in 1873;¹² von Kaufman's economic subjugation of Kokand to Russia in 1868, and Gen.

aqsaaqal, or elder.¹⁹ Sophisticated irrigation systems had at one time existed and been utilized, but were destroyed in the 13th century by the Mongols, and never rebuilt; this was because the native population was adequately fed on the land with reduced levels of irrigation.²⁰ At the turn of the 20th century, irrigated lands were still concentrated along the Amu Darya river, in the more temperate southwest region of Turkestan (modern Turkmenistan), and the Fergana and Zarafshan valleys around Tashkent, Andijan, and Samarkand (modern Uzbekistan).²¹

The new Russian "agrarian order" in Turkestan established a legal precedent wherein the Russian government owned all uncultivated "nomadic" land,²² in a not-too-great change from the traditional practice, and an 1873 statute transferred title of all Turkestan lands to the government.²³ The government then took further action by declaring that: "all occupied or settled tracts belonged to the person who actually worked the land."²⁴ This decree turned many tenant farmers and sharecroppers into hereditary owners, and has been regarded as a highly progressive step taken by the colonial regime. Whitman elaborates that previous tenants were granted the right of perpetual utilization and transference of property through heritance. The production pattern of Turkestan cotton was initially unchanged, as the Russian state had merely replaced the native aristocracy and clergy as rent collectors. Whitman identifies a separate decree in 1886 which established the right of private land ownership; this was more or less trivial, as legal and administrative hurdles combined with hostile credit practices to create a disincentive to transfer to private ownership. "In 1909 ... only 1 percent of the sown area of Fergana, Syr Daria [sic], and Samarkand *oblasts* was owned outright by individuals; the rest had either been left to church establishments on condition that they till it or was occupied by peasants enjoying perpetual and inheritable use of it" under the original 1873 decree.²⁵

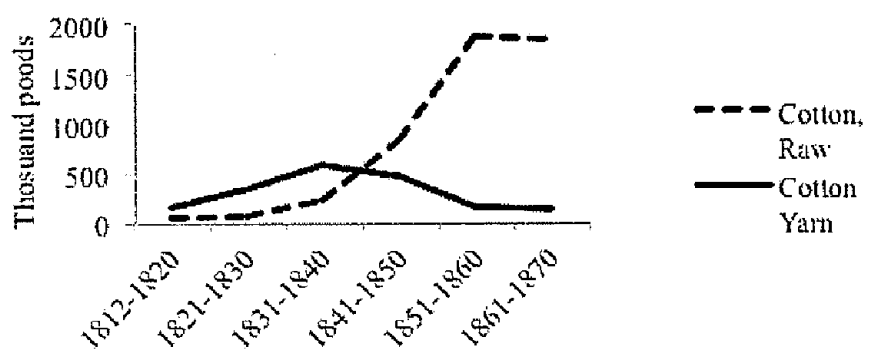
Lyashenko identifies irrigation as "the second most important condition in the agricultural economy of the settled regions in Central Asia and Turkestan."²⁶ While irrigation systems had long played a vital role in the economy of the semi-arid Central Asian basin, the appropriation of water resources had long suffered from logistical difficulties and administrative inefficiency. While custom dictated that water was to be distributed equitably and not bought

or sold, successful irrigation systems required massive amounts of labor and were not successful in all localities.²⁷ After the Russian conquest, "customary rights" left the norms of administrative abuse and inefficient practice in force, while the government reserved the rights of supervision and all new installations. By the first decade of the 20th century, "the total area of irrigated land in Central Asia (including the vassal possessions of Khiva and Bokhara) amounted to [12,845,154 acres], of which the five provinces of Turkestan contained [7,580,746.5 acres], and Bokhara, [4,319,513.7]."²⁸ Whitman explains that the high labor costs associated with irrigation projects "led to the parcelization of the land."²⁹ This, in turn, limited most native peasants to extremely small plots, very rarely more than 5-7 *dessyatina* – or 13.5-18.9 acres – a condition which remained so after the Russian conquest.

The Integration of Turkestan Cotton and the American Civil War

Cotton consumption in Russia was historically lower than in the rest of Europe; that is to say, Russian consumption by weight in 1904, after the addition of Turkestan supplies and considerable development of the industrial base, was still only 5.3 pounds per capita. This compared poorly to annual per capita consumption of 39 pounds in England, or 20.4 pounds in the United States.³⁰ It is important to note, of course, that the population of the United States in 1900 was 82.166 million,³¹ while in 1897 the Russian population was already over 125.64 million.³² However, this still represents a significantly lower level of consumption than elsewhere, especially for a country which, according to some, was at this point industrialized. George Anderson posits that "under Nicholas II Turkestan was expected to fill a hiatus in a Russian economic system whose main motivation was the principle of self-sufficiency."³³

Fig. 1, Imports of Yarn and Cotton



From Lyashenko, p. 334.

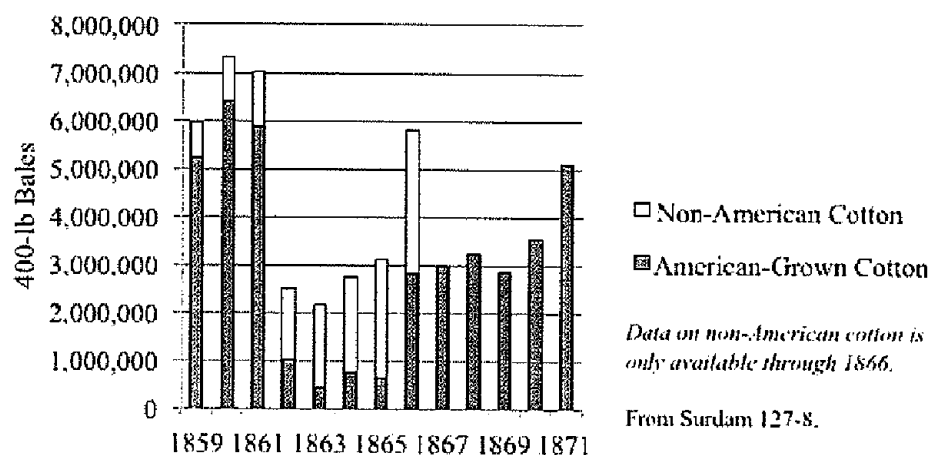
Before Russia's conquest of Central Asia even commenced, however, two events significantly affected the availability of raw cotton to the Russian textile industry. The outbreak of the Crimean War in 1854 alienated much of Western Europe from Russia and cut off supplies of raw cotton from growers in the American south.³⁴ This conflict first motivated the tsarist government to consider Central Asia as a source of cotton for the burgeoning textile industry. Between 1850 and 1860, Russian imports of Asiatic cotton grew to a total of 270,000 poods – or about 4,876 tons* – from just over 1,800 tons in the previous decade.³⁵ Unfortunately, Pierce's citation of A.E. Alektorov for these numbers conflicts with Lyashenko's account: where Alektorov posits the above figures for the period 1850-1860, Lyashenko claims they fit the period 1850-1855. This discrepancy between the data of these two ethnographers and historians is all but impossible to rectify. For that reason, we will simply assume validity for Lyashenko's numbers, as he offers more data for analysis.

Again, beginning in 1862, the global market for cotton was dealt a severe blow by the outbreak of the American Civil War and the Union blockade of Confederate ports. As the United States was the primary supplier of the world's cotton supply, prices were pushed much higher as a result of the cut in supply. David Surdam's work on raw cotton markets prior to and during the American Civil War evaluates the changes in demand for raw cotton from American growers and from all growers as well as total supplies on the world market. According to Surdam, "Before the Civil War, American-grown cotton accounted for 85 per cent of total consumption of cotton in the United States, Great Britain, and Continental Europe,"³⁶ presumably including Russia; from 1850-55 (by Lyashenko's figures), Russia imported a total of about 4,876 tons of raw cotton from Turkestan,³⁷ while 33,786 tons were imported from various other sources – mainly the United States – for the period 1851-60.³⁸ As a result of the Civil War and the increased costs associated with shipping American cotton, Russian imports from the west dwindled to 10,601.5 tons by 1863, down from 44,988.7 tons in 1861. Meanwhile imports from Central Asia grew from 2,745.2 tons in 1861 to 12,714.6 tons in 1864.

An important side note is that this analysis focuses primarily on trade in raw cotton – and occasionally ginned cotton lint – rather than spun cotton yarn. Lyashenko points out that beginning in the 1850s, imports of raw cotton began to outstrip imports of yarn "with the development of the whole cycle of cotton production in Russia (cotton, yarn, fabrics, and calico-printing production)."³⁹

⁴⁰The precise effect of the American Civil War on Russian cotton supplies is difficult to determine, though trends in global data bear example to the severity of the impact. An examination of David Surdam's work on American cotton in global markets before and during the civil war reveals both the complexity of the issue, and Surdam's contention with previous evaluations of war era cotton markets. He addresses the question of changes in demand for cotton provided by American and non-American producers during and after the American Civil War. Contrary to previous theses, Surdam argues that King Cotton of the American South was not on the decline or in danger of being usurped as the world's

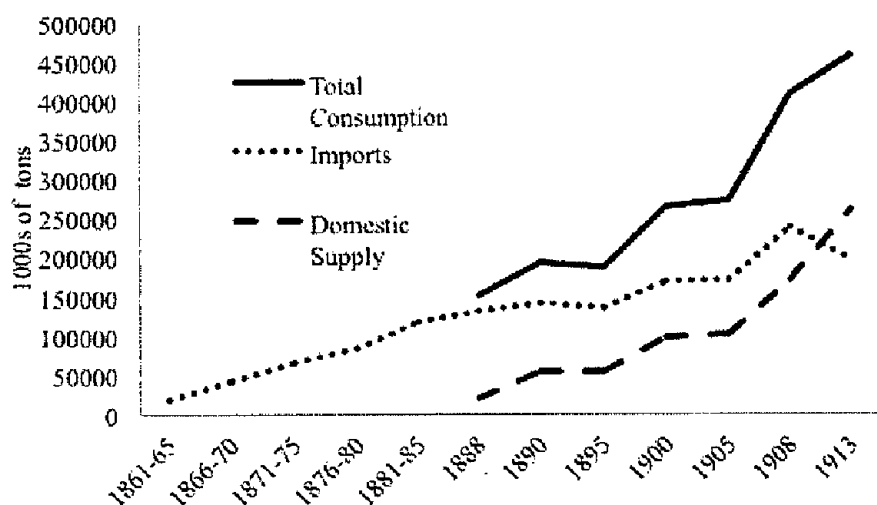
Fig. 2, World Demand of Raw Cotton



cotton supplier on the eve of the Civil War. In fact, Surdam validates previous arguments that demand for American-grown cotton during the Civil War could have stagnated or decreased, while total world demand for cotton from all growers increased.⁴¹ This conclusion, among others from Surdam's work, affirms John Hanson's conclusion that total world demand for cotton continued to grow during the 1860s, despite the significant impediment to supply brought on by the Union blockade of the South.⁴² Meanwhile, American cotton growers regained prominence as soon as 1871, as demand for American cotton achieved pre-war levels of over 5⁴³

million bales at prices similar to those in 1861 and preceding years.

Fig. 3, Consumption of Cotton in Russia



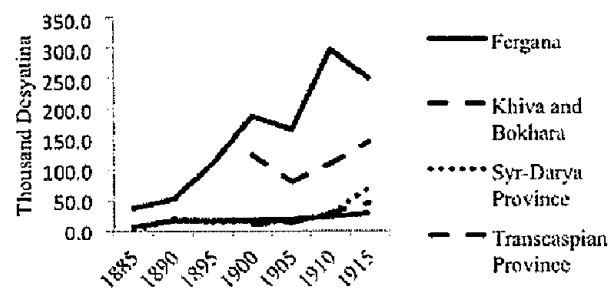
Arcadius Kahan, *Russian Economic History: The Nineteenth Century* (Chicago: University of Chicago Press, 1989), 14.

As alluded to previously, the interruption of shipments of American cotton to the east left the Russian textile industry wanting, and so the government turned to Central Asia. Beginning in the 1860's, government officials instituted a series of protectionist policies in order to promote domestic industrial development. Chief among these were protectionist tariffs: in 1861, raw cotton could be imported duty free, while yarn carried a duty of 325 kopeks/pood; in 1891, a tariff of 120-135 kopeks/pood was leveled on raw cotton, while the duty on yarn was raised to 420-540 kopeks/pood.⁴⁴ However, as Gatrell points out, tariffs may not have been purely protectionist policies. Indeed, the tsarist government may have leveled duties on imports as an easy form of income.⁴⁵ A more rational policy offered by Gatrell is lifting tariffs on imports of primary or raw goods, in order to make available cheap inputs for manufacturing. Political Economists identify the policy enacted by the government as import substitution industrialization: or the promotion of domestic primary and secondary sectors of the economy to lessen dependence on imports and build the domestic economic base. Even into the turn of the century, tsarist policy taxed imports of raw and manufactured materials; when falling prices threatened Russian textiles from 1900-1903, progressive Minister of Finance Sergei Witte refused to lower the tariff on imported cotton, the price of which had fallen more quickly

than that of finished goods, and instead subsidized cotton exports.⁴⁶ Even if the tariffs were instituted as sources of revenue, they nonetheless hampered Russian economic development, particularly as fledgling Russian industries hungered for imported raw materials and industrial capital.

Once Russia consolidated rule over the territory of Turkestan, significant growth of cotton could be pursued. For the first decade or so of significant imports from Central Asia, native Asian varieties of cotton were grown which were coarse, short-fibered, grey, and had to be processed slowly by hand.⁴⁷ After some experimentation, it was discovered in the 1880s that the American upland variety provided a higher quality product and was more suitable to the drier climate of Central Asia than some other foreign varieties. The gradual adoption of the *Gossypium hirsutum* plant throughout the 1880s increased yields significantly, as well as the ease of processing and the quality of the end product. As the graph below shows, despite a slow start, growth of cotton proliferated greatly into the 20th century, particularly in the fertile Fergana Valley. The completion of the Tashkent-Orenburg Railroad

Fig. 4, Acreage Under Cotton in Turkestan



From Lyashenko, p. 611

significantly increased the level of Turkestan's integration into the Russian national economy. Its opening "touched off a cotton boom in Fergana which attracted much Russian private capital."⁴⁸ Both domestic production and imports of cotton suffered beginning in 1914, as World War I strained resources across the globe, and Russia would not attain peak

cotton production levels again until the mid-20s as a result of the post-revolution economic slump.

For a more thorough understanding of the concentration of cotton growth in the Central Asian region, see the attached map. The darkly shaded area comprises Syr-Darya, Transcaspian, and Samarkand Provinces, while the lightly shaded area constitutes the Fergana – as well as the Zarafshan – valley, and the protectorates of Khiva and Bokhara. As the graph from Lyashenko indicates, the latter three territories produced a disproportionate share of the cotton grown in Turkestan in the late 19th and early 20th centuries. The obvious explanation for the fall of production before 1915 is the onset of World War I. Most likely, the fertile lands of Fergana and other parts of Turkestan were redirected to grain production in order to feed troops as part of the war effort. Despite the predominant concentration of cotton production in the Fergana and Zarafshan valleys, in 1913-14, 82% of arable land in Turkestan and 89% in Bukhara was devoted to grain.⁴⁹ The rest of Central Asia did not increase productivity in cotton until the implementation of guided Soviet economic policies in the 1920's and 30's.

Conclusion

Data gathered on the imports and domestic of raw cotton in Russia in the late 19th and early 20th centuries shed light on the economic agenda of the tsarist government, while an understanding of the history of this period puts that data into context. While the Russian Empire in this period is often considered insular and something of a pariah, the impact of the American Civil War, in addition to other conflicts, indicates that the Russian economy was integrated to a significant extent with the global market. Beginning in the 1850s, the Russian interest in Turkestan and Central Asia can be explained in large part by the pursuit of economic interests, though these were by no means the only motivators in a period characterized

by imperial colonialism on a huge scale. Russia, despite its relative successes in Central Asia, still lagged behind the rest of the world; despite Lenin's claim that Russia became a full-fledged capitalist economy with the emancipation of the serfs in 1861, capitalist industrial development in this period remained pathetically behind that of Russia's western counterparts. However textiles did undeniably flourish more than most other industries, thanks in no small part to the growth of cotton spinning, weaving, and the significant agricultural contributions of Turkestan.

As the data have shown, growth of cotton in Central Asia provided a significant boon to the Russian economy. In 1912, Minister of Agriculture A.V. Krivoshein argued that Russia could become completely independent of American cotton if incredibly ambitious irrigation projects were undertaken and the regional economy became based almost solely on cotton.⁵⁰ As indicated by trends in figure 3 on p. 13, this may have been possible, as more cotton was produced domestically around the turn of the 20th century than was imported. However, while entirely characteristic of the colonial status of Russian Turkestan and whether plausible or not, in hindsight this would likely have yielded catastrophic consequences for the region, as grain growers – that is, European Russians feeding the population of Turkestan – suffered from periodic bad harvests, crop diseases, and interruptions from war throughout the early 20th century. Nonetheless, the American Civil War was something of a silver-lined storm cloud for Russian cotton manufacturers; the Union blockade of the cotton-growing south cut off Russia's most valuable supplier of raw cotton, and yet provided the final impetus for the conquest of Turkestan and integration of the cotton growers there into the greater national economic interest. This ultimately demonstrated how tied Russia was to global trade, simultaneously laying the foundation for major political and economic events in years to come.

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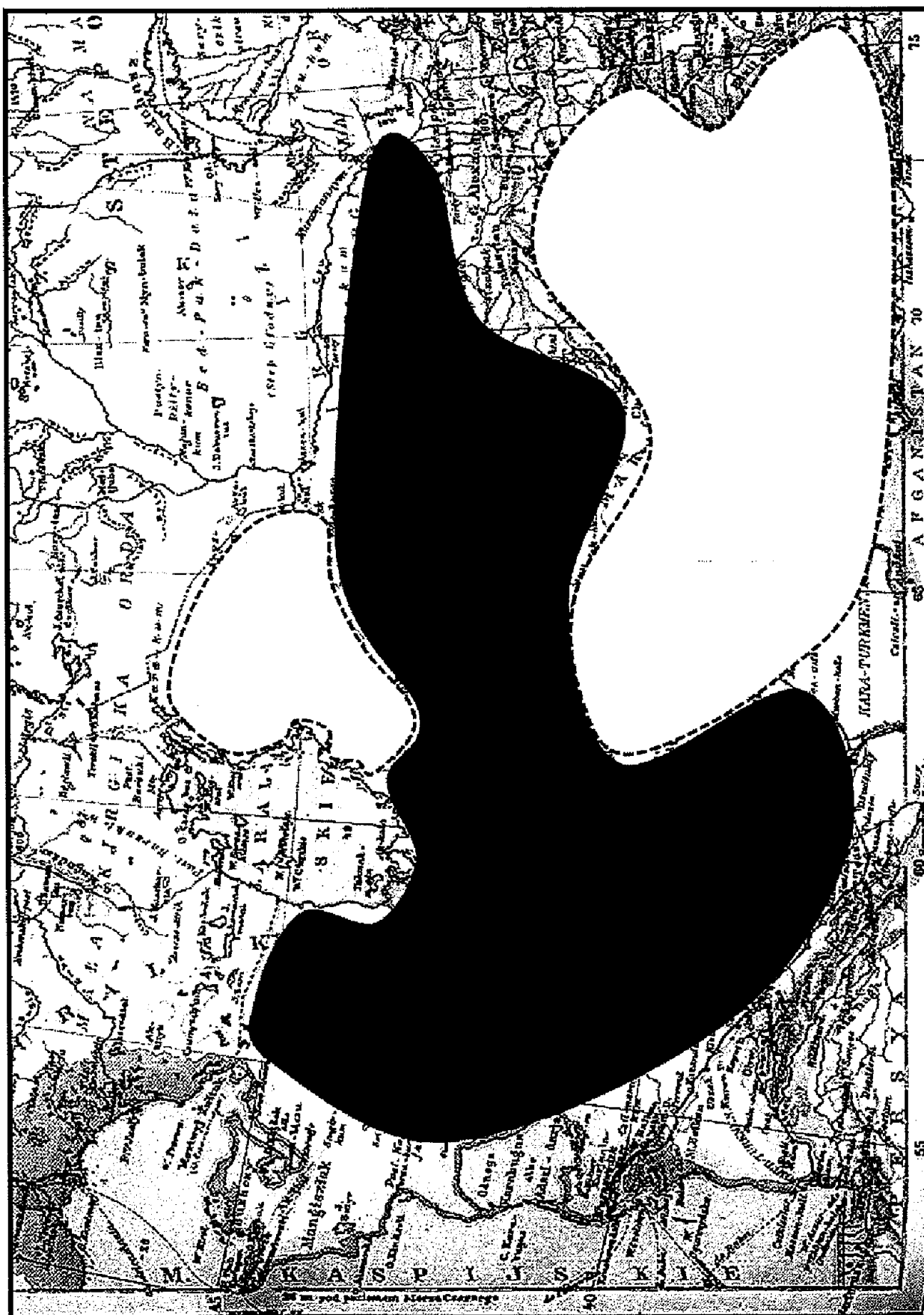
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- ² Peter Gattrell, *The Tsarist Economy 1850-1917* (New York: St. Martin's Press, 1986), p. 173.
- ³ Peter Lyashenko, *History of the National Economy of Russia* (New York: MacMillan Company, 1949), p. 332.
- ⁴ Ibid p. 333.
- ⁵ Lyashenko p. 334.
- ⁶ Ibid, p. 333.
- ⁷ Ibid, p. 333-4.
- ⁸ Ibid, p. 337.
- ⁹ Lyashenko p. 335.
- ¹⁰ D'Encausse p. 135.
- ¹¹ Ibid p. 142.
- ¹² Ibid p. 145.
- ¹³ D'Encausse p. 141, 147.
- ¹⁴ Lyashenko p. 606.
- ¹⁵ Ibid.
- ¹⁶ Ibid.
- ¹⁷ Ian Murray Matley, "Agricultural Development," in *Central Asia: A Century of Russian Rule*, ed. by William Allworth (New York: Columbia University Press, 1967), p. 278.
- ¹⁸ Matley p. 278.
- ¹⁹ Ibid p. 280.
- ²⁰ Ibid p. 267.
- ²¹ Ibid p. 268.
- ²² Lyashenko, p. 606.
- ²³ John Whitman, "Turkestan Cotton in Imperial Russia," *American Slavic and East European Review*, 15, 2 (April 1956): p. 198.
- ²⁴ Matley p. 281.
- ²⁵ Whitman p. 197.
- ²⁶ Lyashenko p. 607.
- ²⁷ Ibid p. 608.
- ²⁸ Lyashenko p. 607. Converted by author from original desyatina at ~2.7 acres/desyatina

- ²⁹ Whitman p. 197.
- ³⁰ Ibid, pg. 509.
- ³¹ U.S. Census Bureau. US Population from 1900. <http://www.demographia.com/db-uspop1900.htm>.
- ³² Pervaya vseobshchaya perepis' naseleniya Rossiskoi Imperii 1897 g., Raspredelenie naseleniya po rodnomu yazyku, guberniyam i oblastyam. http://demoscope.ru/weekly/ssp/rus_lan_97.php.
- ³³ George W. Anderson, "Agriculture in the Undrained Basin of Asia," *Agricultural History*, Vol. 22, No. 4 (October 1948), p. 234.
- ³⁴ Pierce p. 164.
- ³⁵ Ibid.
- * 1 pood = 36.121 pounds
- ³⁶ David Surdam, *King Cotton: Monarch or Pretender? The State of the Market For Raw Cotton on the Eve of the American civil war*, p. 122.
- ³⁷ Lyashenko p. 355.
- ³⁸ Ibid p. 334.
- ³⁹ Ibid.
- ⁴⁰ Surdam p. 130.
- ⁴¹ Ibid.
- ⁴² Lyashenko p. 558.
- ⁴³ Gatrell p. 166.
- ⁴⁴ Ibid p. 182.
- ⁴⁵ Pierce p. 164.
- ⁴⁶ David MacKenzie, "Turkestan's Significance to Russia (18590-1917)," *The Russian Review*, Vol. 33, No. 2 (Apr. 1974), p. 182.
- ⁴⁷ Matley 275.
- ⁴⁸ MacKenzie p. 183



Transcaspia, including Turkestan, in 1903. S. Orgelbranda *Encyklopedia Powszechna z ilustracjami i mapami*, 1898-1904.