

The Preobrazhenskii-Feldman Myth and the Soviet Industrialization¹

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1 Two versions of industrialization

Forced industrialization launched under the first Five Year Plan (1928-1932) was a formative event that set the course of the Soviet economy. A prominent feature of industrialization, which became a permanent part of the Soviet growth strategy, was the priority afforded to heavy industry.² In his speeches at the time Stalin repeatedly enumerated the objectives of industrialization and the reasons for the stress on heavy industry. Party documents and economics textbooks elaborated on the subject. Industrialization and the buildup of heavy industry were said to be necessary for the construction of socialism and for assuring the country's defense.

In the West, industrialization and the growth pattern it established featured prominently in economic histories of the USSR and textbooks on the Soviet economy which started appearing in the 1950s. Even cursory treatments of the Soviet experience by non-specialists may include discussions of industrialization (e. g., North, 2005, pp. 148-9). The opening of the Soviet archives in the last two decades brought about a new crop of publications on the origins of industrialization policies.

The standard view of industrialization in this literature differs in several respects from the contemporary Soviet explanation. It deemphasizes, omits, or even denies, without giving any reasons, the defense rationale. Instead, industrialization is said to pursue economic growth following a strategy developed, chiefly by E. Preobrazhenskii, in the course of the debates of the 1920s. The priority of heavy industry in the allocation of investment was a means for accelerating growth, as established by Preobrazhenskii and G. Feldman in their contributions to

² Heavy industry includes power generation, coal mining, oil and gas, metallurgy, machinebuilding and metalworking, chemical, and some other industries.

the debate (e. g., Ofer, 2008, p. 722). The western account is thus civilianized and intellectualized compared to the Soviet one.

In this paper I argue that the standard view has serious logical and evidentiary flaws. The relevant characteristics of industrialization have a simpler, alternative explanation, which is closer (though not identical) to the Soviet story. In the next section I present Soviet official pronouncements on the origin of industrialization and the priority of heavy industry. The version of industrialization which predominates in the Western economic literature is documented in Section 3. In section 4, I show the weaknesses of this version, and in section 5 suggest the reasons for its emergence.

2 The Soviet explanation

2.1 Objectives of industrialization: socialism and defense

The XV Party Congress in 1927 adopted a resolution “On the directives for compiling the five-year economic plan.” The very first directive said: “Taking into account the possible military attack on the proletarian state it is necessary in the Five Year Plan to pay maximum attention to the fastest possible development of those sectors of the economy and of industry which play the main role in supplying defense and in the economic stability of the country in wartime. Not only planning and economic organs, but, most importantly, the whole party must pay unflagging attention to the issues of defense in connection with compiling the Five Year Plan” (Voronetskaia, 1969, pp. 42). All other directives for the future plan – on the tradeoff between consumption and investment, growth rate, foreign economic relations, relative development of agriculture versus industry, and of various sectors of industry – followed after the call to concentrate on defense.

Stalin (1928, pp. 247-253) gave three reasons for accelerated development of industry. The first was the need to complement the most advanced social system with the most advanced technology, so as to achieve the final victory of socialism in the country. The second reason was that “It is impossible to stay independent without the sufficient industrial base for defense. It is impossible to create such an industrial base without the most advanced industrial technology.” He compared his policies to those of Peter the Great, who “feverishly constructed plants and factories to supply the army and strengthen the defense” (ibid., p. 248).³ Later on, Stalin (1931, pp. 38-39) gave a colorful, often quoted, justification of the rapid pace for industrialization as the need to prevent the repetition of Russian history: that of a weak country always beaten by its neighbors.

In his speech on the results of the first Five Year Plan, Stalin (1933, pp. 172-173) named six main tasks of the plan: 1. equip the country with modern technology; 2. turn it into a powerful industrial country standing on its own and independent of the whims of world capitalism; 3. increase the share of socialist institutions in the economy; 4. create an industry capable of reequipping all sectors of the economy; 5. collectivize agriculture; 6. create all the necessary technical and economic conditions for the maximal increase in defense capability. Tasks one and four refer to means rather than final objectives (modern technology for what?). Tasks three and five concern building socialism; tasks two and six - defense.

Stalin then named the four accomplishments of the plan in industry: the extinction of capitalist economic institutions; turning an agrarian country into an industrial one; reaching 93.7% of the five-year target for industrial production in four years; and turning a weak and militarily unprepared country into one capable of mass-producing all the modern weapons

³ The third reason was the need to provide agriculture with modern equipment.

(Stalin, 1933, pp. 179-181).⁴ Again, the second and the third of these are means to some greater goal. The first achievement concerned building socialism and the fourth - defense. Justifying the break-neck rate of change during the first Five Year Plan, Stalin only briefly mentioned the need for a new technological base, speaking mainly of mortal danger to the country, the threat of military intervention, and overcoming military weakness (ibid., pp. 183-4).

Here is how the official party history summarized the reasons to advocate for industrialization in 1925: “Industrialization would secure economic independence for the country, strengthen its defense capability, and create conditions necessary for the victory of socialism in the USSR.” (*Istoriia*, 1938, p. 264). Leontiev (1946, pp. 11-13) lists the same three reasons in reverse order.

2.2 Priority of heavy industry: socialism, independence and defense

The official reasons for the stress on heavy industry included, in addition to building socialism and providing for defense, the need to preserve the country’s independence. In some pronouncements, independence could be interpreted to mean the inoculation of the USSR against boycotts and other politically motivated trade disruptions, or making sure it does not turn into a “raw material appendage” of capitalist economies.⁵ However, on other occasions the country’s economic independence was clearly cast in strategic terms.

The XV Party Congress resolution “On the directives for compiling the Five Year Economic Plan” demanded that first priority be given to the production of means of production, so as to satisfy the demands of all sectors of the economy from domestic sources. “The sectors of heavy industry that should grow the fastest are those that, in the shortest time, increase the economic

⁴ On this, one of Stalin’s harshest critics concurred: “Undoubtedly the most important successes ... have been achieved in the war industries.” (Trotsky, 1937, p. 10)

⁵ Stalin, 1925a, pp. 298-9; 1925b, pp. 354-6; 1926, pp. 120-1; Institut, 1954, pp. 195-7.

and military might of the USSR, guarantee development in case of an economic blockade, weaken our dependence on the capitalist world” (Voronetskaia, 1969, p. 285). The resolution of the XVI party conference “On the Five Year Economic Plan” stated: “Based on the general idea of the country’s industrialization, strengthening its defense, and freeing it from its dependence on capitalist countries, industrial investment is directed primarily into the sectors making means of production ...” (Institut, 1953, p. 450).

Speaking on the results of the first Five Year Plan, Stalin listed what would have happened if heavy industry had not been favored at the expense of consumer goods production (1933, pp. 182-3). The country would have been left unarmed in the face of technically advanced capitalist world; agriculture would have been deprived of equipment, and hence the country of food supplies; capitalist elements would have been left intact, hence “unbelievably increasing the chances of capitalist restoration”; the country would have been deprived of means of defense, making it the victim of external enemies. The overall result would have been a bloody, unequal war to the death with better-armed enemies.

Soviet victory in World War II would have been impossible without large quantities of modern armaments, which, in turn, required metal and fuel. “It would have been impossible to defend the country without heavy industry.” And the post-war targets for production of pig iron, steel, coal, and petroleum were explained as necessary to protect the country “from any accidents” (Stalin [1946], pp. 10-11, 14-15, 20).

Economics textbooks repeated these arguments. “The first task of socialist planning is to secure independence of our economy from its capitalist surrounding. Realizing this task is directly connected with the strengthening of defense capability”. “... The party developed heavy

industry, so as to secure economic independence of the USSR.” “Only the development of heavy industry made the creation of the modern military industry possible ...” (Sorokin, 1946, p. 18). “The need to possess powerful armed forces ... requires strong and highly developed industry and, first of all, heavy industry with its heart, machine building. Only the industry with huge production capacity, and, first of all, a formidable stock of machine tools, developed metallurgy, chemical industry, and fuel and power generation sectors, is capable of not just profusely equipping the army with modern weapons, but also of providing a continuous and ever increasing flow of supplies in the time of war” (Ioffe, 1948, p. 5). “Tasks of speeded up preparation for the defense of the country and further technical reconstruction of the economy made it necessary to develop heavy industry faster than light industry in the third five-year plan period” (Lokshin, 1947, p. 50).

An introduction to a collection of documents on industrialization stated that, “The threat of imperialist aggression demanded the accelerated development of machine building in general, and especially the defense industry” (Khlusov, 1971, p. 5). The national planning manual listed “development of heavy industry by all means” as the number one task of both Five Year and one year industrial production plans. Heavy industry was said to be the foundation of economic growth, technological level, and military might (Gosplan, 1974, p. 52).

Soviet economists elevated Stalin’s pragmatic policy to a law of economics. The genealogy of the “law of the faster growth of output of producer goods” was traced to Marx’s schemes of reproduction in the second volume of *Das Kapital* and Lenin’s writings. The law’s operation was said to reflect the nature of modern technological change, which led to “substituting manual

labor with machines”.⁶ This made later Soviet accounts of their growth pattern sound significantly more peaceful than Stalin’s original formulations.⁷

While the law was meant to apply to the relative growth of the sectors of the economy (I and II divisions of production in Marx’s terms), it was usually illustrated with data on the growth of producer and consumer goods branches of industry, called groups A and B.⁸ Growth of the output of the former outpaced that of the latter after 1928 (Notkin, 1984, pp. 148-50). Since the early 1970s, the official line favored the convergence of the growth rates of the two groups (Berri, 1973, p. 13). Yet the share of producer goods in industrial output continued to increase through 1986, when it reached 75.3% (Goskomstat SSSR, 1991, p. 353).

3 Western interpretation

The standard Western version of industrialization downgrades defense and promotes economic growth instead, as shown in this section. The other official goal, building socialism, is mostly reproduced without comment (it will be taken up in Section 4.3). The standard version is not shared by all authors, but then nothing in this discipline, still in its pre-paradigm stage, is. It is a majority view, predominating in the textbooks and reference works such as the *New Palgrave Dictionary of Economics* and *Oxford Encyclopedia of Economic History*. I will also note the authors who deviate from the majority view.

3.1 Defense is out

Western books on the Soviet economy treat its military sector in one of four ways: they don’t mention it; mention it in a perfunctory way, say as one of the items of state budget outlays, without indicating its size or importance; devote a sentence or two out of the book’s several

⁶ E.g., Gerschenkron’s (1959) review of Pashkov monograph; Notkin (1984, pp. 145-155).

⁷ However, Notkin (1984, p. 148) mentions the fact that statistics lumps military goods together with producer goods as one reason for the operation of the law of their speedier growth.

⁸ On the relations among these concepts and heavy and light industry see Nove (1961, pp. 260-2).

hundred pages to the extraordinary characteristics of the military sector without elaborating, drawing any implications, or connecting to the main argument of the text; devote a section or a chapter to it, an option that was very rare before the end of the 1980s (Kontorovich, 2012).

In a break with this pattern, several economic histories of the USSR acknowledge the existence of the official “military might” explanation of industrialization but deny its validity. Erlich (1960, pp. 167-9) disagrees with the “widely accepted line of explanation” ascribing defense motivation to the actually adopted industrialization strategy. According to Dobb (1966, p. 13), “... it is very far from being true, as some [Stalin! V. K.] have asserted, that military considerations were major motives for industrialization” “Industrialization was not simply the principal initial aim of the Drive; it was the only aim. Contrary to official and semiofficial assertions, “defense” was not a problem at the birth of the Great Industrialization Drive.” (Jasny, 1961, p. 4). The latter two authors give no reasons for their conclusions.⁹

Other works on the period conform to the usual pattern. The extremely detailed index of Zaleski (1971) lists many dozens of industrial products, including, for example, macaroni and sausages, hardly the focus of the First Five Year Plan, but has no entries for defense, military, or armaments. He mentions in passing the development of the defense industry as being urged by the resolutions of the XV and XVI Party Congresses, and the increase in military might as a result of industrialization (*ibid.*, pp. 56, 107). Swianiewicz (1965, pp. 74, 180-181) mentions briefly the “building up of military power” as one of the two objectives of policy without developing it or connecting it to the rest of the discussion. Nove (1969, p. 121-2) acknowledges

⁹ Erlich’s reasons are discussed in section 5.3 below. Both Dobb and Jasny acknowledge that the role of defense increased with the subsequent Five Year Plans.

national security as one of the motives for industrialization. However, further in the book he sounds uncertain on the subject (ibid, pp. 187-8; also 226).

The chapter on the end of NEP and the beginning of industrialization in Munting (1982, ch. 3) does not even contain the words “defense” or “military,” though it speaks of heavy industry implying strength and independence, and of the international situation in several places (ibid., pp. 67, 74). Defense is absent from Davies’ (1994, pp. 137-8) section on “industrial plans and objectives” and from Gregory’s (2004, pp. 29, 76) lists of “four core values” and “four main economic objectives” of the Politburo at the time.

If detailed, book-length economic histories of industrialization mention its military reason in passing or even deny it, one is not surprised that it is missing altogether in the more concise treatments (Rutland, 1985, pp. 73-97; North, 2005, pp. 148-9). Many Western textbooks on the Soviet economy and comparative systems, when discussing industrialization, do not mention its military motivation.¹⁰

Military motivation is even less likely to be discussed in connection with the priority of heavy industry.¹¹ Extended treatments of the priority of heavy industry take the Soviet political economy of socialism seriously. They discuss the Marxian derivation of the law of faster growth of the output of producer goods and its relation to the rate of economic growth, but do not mention Stalin and his military explanation.¹² More concise treatments of the subject, surveyed in 3.2.2, are equally devoid of any references to defense.

3.2 Economic growth is in

¹⁰ Millar (1981, pp. 21-33), Dyker (1985, p. 3), Gregory and Stuart (1985, pp. 234-5). Gregory and Stuart (1986, pp. 68-105) and Campbell (1966, Ch. 2) mentioned it in passing.

¹¹ See footnote 19 for the few instances I found.

¹² Dobb (1955), Moravcik (1965), Wiles (1964, chs. 14 and 15), Dyker (1983, pp. 109-113).

In the standard version, economic growth/development was the objective of industrialization. Soviet pronouncements at the time about the need to catch up with the advanced economies (e. g., Institut, 1953, p. 175) seem to support such a formulation. Some authors directly state that growth was the goal of industrialization.¹³ Others postulate close correlates of growth, like the expansion of productive capital or investment maximization as the objective.¹⁴ The same point is also made indirectly when the strategy of industrialization is derived from a debate whose participants were concerned with economic growth and when a prominent feature of industrialization – the priority of heavy industry – is interpreted as a policy aimed at growth acceleration.

3.2.1 Economics debate and the origin of industrialization

In the 1920s, before Stalin consolidated his power, a discussion of the directions for economic development unfolded in the USSR. While constrained by the obligatory use of the Marxist framework and loyalty to socialism, this “Great Debate” (Nove, 1992, p. 115) was freer than any in Soviet history (with the exception of 1987-91), and incomparably more original. Adherents of rapid industrialization were associated with the Left (Trotsky) current in the party, and gradualists with the Right (Bukharin). All the debate participants, right and left, were interested in economic growth geared towards consumer satisfaction (de Schweinitz, 1964, p. 1137).

The debate attracted much attention among Sovietologists, with publications including several book length treatments (Erich (1960), Spulber (1964a)), English language translation of the main contributions (Spulber, 1964b; Preobrazhensky, 1979), and many articles parsing the

¹³ Spulber (1964a, p. 54), Campbell (1966, pp. 25-26), Dyker (1985, pp. 2-3), Hunter and Szyrmer (1992, p. 24), Davies (1994, pp. 137-8), Gregory (2004, p. 76).

¹⁴ Swianiewicz (1965, pp.180-181), Gregory (2004, pp. 82-3), Gregory and Harrison (2005, pp. 723, 731), Gatrell (2006, p. 306).

arguments of the leading participants (e.g., Erlich (1950), Domar (1957), Dobb (1965), Millar (1978)).

E. Preobrazhenskii was a prominent participant in the debate from the Left. He is best known for his ideas about primitive socialist accumulation, the need to extract resources for industrialization from the peasants (Ellman, 1990a). This paper focuses exclusively on his views on the rate of industrialization and the role of heavy industry.

A standard Western treatment of industrialization starts with recounting the course of the debate.¹⁵ It is often mentioned that the struggle of ideas was intertwined with jockeying for power, with Stalin changing his position to that of his defeated foes on the Left. Still, in the standard story, the ideas voiced in the debate formed the basis of the actual policy that followed. “The final outcome of the debate was the formidable program of Five Year Plans.” (Erlich, 1950, p. 57)¹⁶ More specifically, in Dobb’s (1967, pp. 137-8) words, it has been a widely held view in the West that while Preobrazhenskii’s position was officially repudiated, the industrialization followed the path he outlined.¹⁷

3.2.2 Priority of heavy industry as a growth accelerant

E. Preobrazhenskii argued that the production of means of production has to grow faster than the aggregate output to effect the desired acceleration of growth (Erlich, 1950, p. 66). Since industrialization has been thought to generally follow Preobrazhenskii’s blueprint, “his proposals regarding the relative growth rates of heavy industry versus consumer goods industries are likely to have played a similar role in the formulation of Soviet policy.” (Moravcik, 1965, p. 246).

¹⁵ Campbell, 1966, pp. 12-21; Nove, 1969 and 1992; Millar, 1981, pp. 11-16; Gregory and Stuart, Ch. 4, 1986; Munting, 1982; Ofer, 2003.

¹⁶ Also Spulber, 1964a, p. 62; Boettke, 1990, pp. 148-9; Bennet, 2004, p. 91; Ofer, 2008, p. 722.

¹⁷ Erlich, 1950, p. 58; Jasny, 1964, p. 214; Spulber, 1964a, p. 66 and 1969, p. 223; Prybyla, 1965; p. 69, Moravcik, 1965, p. 246; Kaser, 1970, p. 83, with qualifications; Dyker, 1985, p. 3; Gregory and Stuart, 1986, p. 93; Gregory, 2004, p. 31. Miller (1965, p. 835) disagreed and Dobb himself had reservations.

Preobrazhenskii shared the honor of being the author of the Soviet growth strategy with G. Feldman (Ofer, 2008, p. 722). Feldman, a Gosplan employee, published a mathematical model of economic growth, according to which, the greater the proportion of new investment in the producer goods sector, the higher the rate of growth (Ellman, 1990b).

“It is not difficult in this context to understand why Stalin laid such stress on heavy industry. High rates of growth of national income were viewed partly as an end in themselves, partly - certainly by Preobrazhenskii - as a means of ensuring a rapid increase in employment” (Dyker, 1985, p. 3). “The most remarkable feature of the 1930s was the extent to which the pro-heavy-industry bias asserted itself (as Preobrazhensky said it should)” (Gregory and Stuart, 1986, p. 93). “The concentration of investment in [the producer-goods industries]... is the key to rapid growth in Marxist and Soviet growth models” (Ofer, 1987, p. 1807, and 2003, pp. 422-3). A recent book summarizing the archival findings about the Stalin era economy describes capital accumulation in general and accelerated growth of investment in the investment goods sector in particular as “core values” “based on Marxist thought” and developed by Preobrazhenskii and Feldman (Gregory, 2004, pp. 29-31, 76-77, 82-3).

Preobrazhenskii’s and Feldman’s theories about heavy industry and economic growth were founded on Marx’s schemes of reproduction from the second volume of *Das Kapital*. Marx had no references to the military. Preobrazhenskii, like other participants in the 1920s Soviet economic debates, noted the needs of defense in his arguments for industrialization, but they were not central for him (Erlich, 1950, p. 63). Feldman’s formal model incorporated investment and consumer goods, but no government, military, or any other expenditures (Feldman, p. 175 [1928]). The civilian Marx-Preobrazhenskii-Feldman explanation fully displaced Stalin’s military explanation.

There were other, equally civilian, explanations for the priority of heavy industry. It was declared to be a growth enhancing strategy without reference to Preobrazhenskii (Kershaw, 1961, pp. 8-9; Wilczynski, 1970, p. 69). The development of heavy industry (or creation of a production apparatus, or output of steel and electricity, which I take to mean the same thing) was described as an objective in its own right, not as a means to some other end.¹⁸ (Absent further elaboration, this is equivalent to saying the Soviets favored heavy industry because they wanted to.) Gerschenkron (1959, p. 736, and 1962, pp. 577-8) saw “investment for investment’s sake” as the guiding principle of the Soviet economic policy, designed to keep consumption low for fear that popular wellbeing would undermine the dictatorship. And then there were some authors who connected the stress on heavy industry with the military buildup, as explained by the leader.¹⁹

4 What is wrong with the Western version

One-liners on the military motivation of industrialization are scattered throughout the literature on the Soviet economy, side by side with the standard “civilian” view of industrialization, often in the writings of the same authors. The post-1991 archive-based literature has painted a detailed picture of the role of defense in the first Five Year Plan.²⁰ The military objectives of industrialization are also broadly accepted in Russian literature (Pavlova, 2001, pp. 110, 442; Zhuravlev, 2009).

However, none of this has made a dent in the standard version, which continues to reign in the economics literature, as can be seen from the preceding section. Only on a few occasions has it been confronted with the evidence to the contrary. Koropecy (1967, pp. 232-42) and Davies

¹⁸ Hunter (1964, pp. 4, 14), Millar (1981, pp. 31), Gregory (2004, p. 76).

¹⁹ E. g., Rostow (1961, pp. 99, 104); Nove (1969, pp. 122, 227-9), though he does not seem to be too sure at times; and Gregory (1970). Wiles (1964, p. 298) mentions in passing that one variant of faster growth of group A “might have some practical relevance to the “tooling up” period of a rearmament drive, or to the Soviet first FYP”.

²⁰ E. g., Stone (2000), Samuelson (2000), Davies (1993), Harrison (2008) and a review in Ellman (2008, p. 105).

(1974) disputed the interpretation of the Urals-Kuznetsk metallurgical combine, one of the largest projects of the First Five Year plan, as a means of accelerating growth or a planners' mistake. Temin (1991) and Ellman (2004, p. 842) briefly cast doubt on the foundations of the standard version. Here I develop its systematic critique.

4.1 One conceptual and several empirical problems

The standard version violates the basics of the economics method. In economics, growth of output is understood as a means to other goals (Temin, 1991, p. 587), such as military power or popular wellbeing. With industrialization having disastrous effects on the latter, and the former being hardly mentioned, all the literature is left with is growth for its own sake. (Such objectives as maximization of investment or production of steel and electricity boil down to the same thing.) However, growth for its own sake is ill defined, and it is difficult to reconcile with the assumption of the rulers' rationality. This argument is more fully developed in Kontorovich and Wein (2009, pp. 1586-88). Indeed, Campbell (1966, pp. 25-26) explicitly speaks of Stalin's "obsession" with growth. Explaining the policy choice of the late 1920s as pursuing growth for its own sake is a common economics fallacy, using preferences "conveniently introduced ad hoc to explain puzzling behavior" (Becker, 1988, p. 12).

The standard version is at variance with a massive amount of evidence, the official declarations about the military side of industrialization and of the preference given to heavy industry. The rulers' announcements of their intentions are not conclusive, they do not have to be taken on faith, but they cannot be simply ignored or glossed over. Any credible interpretation of the events needs to account for them.

There exists no direct evidence of Preobrazhenskii's and Feldman's authorship of industrialization strategy, such as their work being cited by Soviet rulers, or V. Molotov

mentioning them in conversations with F. Chuev. The standard version of their roles rests entirely on the strength of indirect evidence, the similarities between the writings of Preobrazhenskii and Feldman and the actual policies adopted, such as the high rate of transformation, promotion of heavy industry, and attempt to obtain resources for the industrialization from agriculture. As already stated, this paper focuses exclusively on the first two items, and takes no position on whether collectivization was inspired by Preobrazhenskii's writings.

Chronology rules out Feldman's authorship. The strategy of the faster growth of production of means of production was proclaimed at the XV party congress in December of 1927 (quoted above). The XIV party congress in December of 1925 and the XV party conference in October of 1926 made somewhat less emphatic statements to the same effect (Institut, 1953, pp. 75-77, 185). Feldman published his article in November, 1928. Preobrazhenskii's piece in which he elaborated on priority of heavy industry came out in 1927 (Erlich, 1950, fn. 2 and p. 66), which, given the usual policy lags, also casts doubt on his authorship.

Any similarities between Preobrazhenskii's theories and policy need to be weighed against the differences. Preobrazhenskii was interested in maximizing consumption over the long run. Yet the economy built in 1928-1932 had a permanently depressed share of consumption in the national product (Ofer, 1987, p. 1790). Preobrazhenskii was sharply critical of "overinvestment" in the first Five Year Plan (Ellman, 1990a, pp. 216-7), and was himself attacked "for his theory of "production for consumption's sake", as opposed to the official theory of developing heavy industry at all costs" (Filtzer, 1979, p. 66).

The broader context of policy making also casts doubt on Preobrazhenskii's authorship. With the onset of industrialization, the economic discussion was shut down. The economists were jailed, fell silent, or started toeing the official line. In the course of the first Five Year Plan, Stalin dictated to Gosplan, rather than take expert advice. After the plan was adopted, its targets were being repeatedly revised upward (Davies, 1989, pp. 170-188). These were all actions of a ruler who was self-assured, trusted in simple solutions, and did not seek complex advice from the economists.²¹

4.2 Stalin did not need Preobrazhenskii's advice

The motives for industrialization and the authorship of its strategy are interrelated. If the first Five Year Plan pursued historically unprecedented objectives - achieving rapid economic growth while restructuring the economy along socialist lines - then it is interesting to see who came up with the route across these uncharted waters. If, however, the first Five Year Plan pursued objectives common to governments through the ages, by using some of the tried and true means, the issue of the authorship of the strategy of industrialization becomes far less intriguing.

Around the world, rulers in pursuit of power sought to build up their armaments industries to equip their armed forces. They understood, without resort to sophisticated economic analysis, that this required the development of upstream sectors, that is heavy industry, and of complementary ones, such as railroads.

In the 16th-18th centuries, "... mercantilism as a system of power was ... primarily a system for forcing economic policy into the service of power as an end in itself." "The end was war, and essential to its purpose was a healthy state of finance ..." (Heckscher, 1935, p. 17). In pursuit of power, governments concerned themselves with supplies of saltpeter, copper alloys, timber, and

²¹ "They were their own economists." (Leontief, 1960, p. 262).

tar, the heavy industry of the period (pp. 32-33, 39). They adopted other policies familiar to the students of industrialization, promotion of economic self-sufficiency and creation of mobilization reserves by compelling “the building of private ships which could be adapted in time of war” (pp. 34-35, 40-46).

Russian practitioner of mercantilism, Peter I, concentrated his industrial efforts on “production and working of metals... uniforms for the army, sails, ropes, and timber for the ships, and powder for the guns.” (Gerschenkron, 1970, p. 78). As shown above, Stalin compared himself to this emperor.²² Russian industrialization of the 1890s was militarily-motivated.²³ “Russia’s integrity as a great power was a primary consideration in ... the state’s promotion of industrialization. This motive was reflected in the type of industry which the state encouraged – heavy over light” (Siegelbaum, 1983, p. 26). “The very [Soviet] insistence on heavy versus light industry ... is of Russian origin. It simply reflects the controversies of Witte’s days [i. e. 1890s].” (Wiles, 1967, fn. 4).

At the time of industrialization, World War I had happened just yesterday. It was the general belief that economic weakness, as manifested in the shortage of shells, guns, rifles, and other hardware, was “the main cause for the relatively undistinguished performance of the Tsarist army” (Stone, 1976, pp. 108-9). The expansion of the production of armaments was, in turn, constrained by the weakness of the heavy industry sector, as manifested in the shortages of non-ferrous metals, iron ore and coking coal, machine tools and precision instruments (Gatrell, 2005, ch. 5).

²² Paul Bushkovitch, a historian of the period, argues that Stalin overstated the actual extent of Peter’s military industrialization (private communication). What is important for our purposes is the monarch’s image.

²³ Gerschenkron, 1962, p. 131; Gatrell, 1994, p. 4. Goldstein (1971, pp. 78-9) sees the need to highly qualify such statements. Again, it is the perception by posterity that matters for us.

The same thinking operated elsewhere. “Some Chinese officials [in the 19th c.] came to see, reluctantly, the unbreakable chain that led from firearms and ships to coal mines, iron foundries, and railroads; from military technology to industrialization The beginnings of China’s industrialization and Westernization can be traced to the same late-19th century military concerns.” (Hacker, 1977, pp. 52-3). In Japan, the Meiji oligarchy “wanted to create a strong country, and for such a purpose a modern army and navy was a necessity. They could not be created without establishing, in turn, strategic industries to support the military institutions. . . . Heavy industry was developed, in effect, before light industry, and almost exclusively for military purposes.” (Vayrynen, 1992, pp. 40-41).

In the early 20th century, Brazilian army officers believed, based on the example of Germany, France, Japan, and the United States, that “national greatness was linked to military preparedness, which in turn depended upon the country’s economic development.” In their publications, they argued for the need to develop the national coal and steel industries. (McCann, 1984, pp. 737, 760-761).²⁴

Rapid growth of heavy industry went hand in hand with war preparations. In Japan in the 1930s, “It was chiefly the metallurgical, machinery, and chemical industries . . . which mushroomed under the stimulus of armament spending and industrial construction. Consumer goods production in Japanese industry advanced only 33% from 1930 to 1936. By contrast, the output of producer goods jumped 83%” (Lockwood, 1954, p. 71). Without the benefit of the industrialization debate or Feldman model, the German economy in the 1930s had stagnant consumption, rapidly increasing capital investment and government expenditures, and rapid

²⁴ Sen (1984) and Vayrynen (1992) attempt to generalize over these and similar cases of military industrialization.

growth of steel production. “The similarity of result [in Germany and the USSR] suggests similar aspirations.” (Temin, 1991, pp. 584-6).²⁵

4.3 Was socialism easier to build than the airplanes?

In the official pronouncements quoted above, building socialism was named the primary objective of industrialization, followed by strengthening defense. Western literature, while focusing on growth as the objective of industrialization, recognizes building socialism as a full-fledged, important objective of industrialization. Lenin’s heirs “... were bound to regard the ultimate achievement of socialism as the one possible justification for their being in power.” (Nove, 1969, p. 120-121)²⁶ Building a radically new society is an unprecedented undertaking, and sounds much more challenging than building up defense, something the governments have repeatedly done throughout history. Yet if we take a closer look at what was meant by building socialism, it may turn out that it was easier, at least as far as industry and trade were involved, than creating an up-to-date armaments industry.

Socialist construction meant first and foremost getting rid of “capitalist elements” and non-state economic activity (Pavlova, 2001, pp. 126-130). This was accomplished through a combination of police action and defining socialism down. The extinction of capitalist institutions in industry, the first of the four accomplishments of industrialization named by Stalin, was easy. Private industry accounted for less than 10% of total industrial production in 1927, and government repression drove this share, as well as that of private trade, down fast (Davies, 1989, pp. 76-79). The remaining individual artisans working on their own account were reclassified as being part of the socialist sector (Davies, 1994, p. 137).

²⁵ Also Mendershausen (1943, pp. 87-8) on both Germany and Japan.

²⁶ Also Dobb (1966, p. 1), Zaleski (1971, p. 300), Davies (1994, pp. 136-7). Gerschenkron (1962, p. 150 and 1970, pp. 115-116) alone argued that the rhetoric of Marxism and socialism was mere window-dressing “to blur and to disguise the actual motivation and aims” of industrialization policy.

More redefining concerned allocation of labor and consumer goods. In the USSR in the 1920s and the early 1930s, socialism was understood as a moneyless, in kind economy with product-exchange replacing market, everyone being employed by the state and labor being centrally planned. “The postponement of these goals eventually led the party leadership to abandon the daunting assumption that socialism would not be established until they were achieved, in favor of the more restricted notion that socialism simply required the social ownership of the means of production. ... It eventually proved possible to achieve the first, socialist, phase of communism by 1937 only by making drastic changes in its definition, so as to incorporate socialised trade, the kolkhoz market and the money economy within the first phase of communism.” (Davies, 1989, pp. 170-173). Building socialism was something Stalin himself defined; it was his choice when to declare victory in this battle.

One could not achieve military might in the same manner. Military preparedness had clear quantitative dimensions, which could be assessed by the experts and compared to those of other countries. It was subject to the potential test of the battlefield, where unilateral declarations of victory carry no weight. In this sense the objective of military buildup was more real and urgent than driving to zero the private industry’s already negligible share of output. The level of expertise required to, say, build aircraft engines was much higher than that needed for rounding up private traders or adjusting ideological definitions. One of these goals was much softer than the other, and its achievement could be fudged at little cost. This argument does not apply to collectivization of agriculture, an extremely large scale police action with wide ranging unanticipated consequences, that, in Stalin’s words, turned out to be very difficult (Ellman, 2006, p. 969).

5 Why not just take Stalin at his word?

The standard version of industrialization implies irrational behavior and is at variance with a significant amount of evidence (Stalin's declarations, the timing of Feldman and Preobrazhenskii publications). It is based on broad similarities between the writings of Preobrazhenskii and Feldman and the actual course of industrialization, but ignores the equally significant differences. Taking Stalin at his word about the objectives of industrialization and the role of heavy industry produces an interpretation that better agrees with the evidence, does not rely on irrationality, and is simpler. Why is it that the former and not the latter has been broadly accepted?

5.1 Secrecy and other constraints on knowledge

Today, official secrecy is deployed to explain any gaps in the understanding of the Soviet economy during its lifetime.²⁷ A book surveying archival research on the Soviet economy states that by 1991, "our lack of knowledge about this economy remained considerable. This ignorance was not due to the lack of acumen or effort but to the veil of secrecy that had been erected by Soviet leaders" (Gregory, 2004, p. ix). Another archive-based book: "... research on the economic history of the USSR in the 1930s has had a surprisingly "civilian" character. ... The secretiveness of the Soviet system was, of course, a fundamental reason for this" (Samuelson, 2000, p. 1).

Davies (1993) suggests a richer picture of the evolution of the Western views on the role of defense in the first Five Year Plans. While secrecy and the falsification of data on defense expenditures played an important role, researchers also missed some data which the Soviets did make public. Western journalists and diplomats stationed in the USSR in the 1930s conveyed an

²⁷ Hardly any gaps in our knowledge of the Soviet economy were recognized in the final decades of its existence (Kontorovich, 2011, p. 696).

image of the Soviet economy at variance with that projected by the low official defense budgets, but their accounts were ignored in the 1950s, when academic study of the USSR commenced. New Soviet sources of information, first available in the 1970s, arrived too late to be incorporated into the foundational Western studies of national income.

This paper has tested the hypothesis of secrecy as the only binding constraint on the knowledge of the Soviet economy. The Soviets announced the military intentions of the first Five Year Plan and the military rationale for the priority of heavy industry loudly, repeatedly, and clearly. Yet their pronouncements (and a good deal of supporting evidence) were largely overlooked by Western economists in favor of a civilian interpretation.²⁸ There must have been factors other than secrecy at work to produce the standard version of industrialization.

The traditional view of science is that it is a special activity, with its practitioners interested solely in attaining the truth. The secrecy-as-the-only-constraint explanation of the performance of Sovietology is compatible with this view. The alternative, post-Kuhn (1962) view is of scientists being no different from the rest of the mortals, pursuing their own interests (remuneration and recognition) subject to their cognitive limitations and the social relations in which they are embedded, an approach also developed by the economics of science (Diamond, 2008, p. 329).²⁹

In the modern academia, scientists are evaluated, and accorded recognition and remuneration, by other scientists. A rational scientist will choose a research topic or hold a position on important issues with the view of enhancing his evaluation by his colleagues. This

²⁸This is part of a general pattern in the literature on the Soviet economy (Kontorovich and Wein, 2009; Kontorovich, 2012).

²⁹Kitcher (1993, ch. 1) and Hands (1997, pp. S107-S112) discuss changing views of science.

creates a pressure for conformity, necessary for upholding scientific standards, but potentially stifling innovation.³⁰ Several formal studies have shown how, under different simple assumptions, such behavior may advance or retard the acquisition of new knowledge.³¹

The focus on growth and the slighting of defense in the standard version of industrialization can be understood as adaptations to the evaluation criteria in force in the 1950s-1980s, in the heyday of the Western study of the Soviet economy. These criteria may have become defunct with the end of Sovietology itself, but the concepts and approaches developed in that period have become part of the accepted stock of knowledge and continue in circulation. The evidence of these evaluation criteria, presented in the next two subsections, is indirect, reverse-engineered from the evaluated texts themselves. What follows is a hypothesis which may be further tested by the internal documentation of economics departments and grant-making agencies.

5.2 It is about us, not them

A study of American thinking about Russia and the USSR observed that in the 1930s, “American intellectuals looked to the Soviet Union for solutions to what they saw as the problems of modern America – or, more broadly, the problems of modernity itself.” (Engerman, 2003, p. 155) Indeed, even several decades later, some Western economists saw Soviet industrialization as a solution to the problems of poor countries (Dobb, 1966, p. 2; Wilber, 1969, pp. 221-2). However, most of the authors cited above did not share this view. They substituted general (ours, the world’s) problems for those specific to the 1920s’ USSR for a different reason.

The study of the Soviet economy did not grow from the economists’ concerns and interests, but (in the US case) was implanted in the academia by the university administrators, foundations,

³⁰ Polanyi (1962), Goldman and Shaked (1991, pp. 52-3), Brock and Durlauf (1999), Wade (2009).

³¹ Goldman and Shaked (1991), Kitcher (1993, ch. 8), Brock and Durlauf (1999).

and the government in the late 1940s and the 1950s (Kontorovich, 2012). It remained a small field with uncertain chances for survival within academia (Engerman, 2009, pp. 126-70).³² Sovietologists were being hired and promoted by their departmental colleagues who worked in other fields of economics. They stood a higher chance of being noticed, understood, and treated favorably if their research could be seen as addressing the issues central to the discipline as a whole.

Growth and development were among the central concerns of Western governments after World War II, and also among the main topics of Western economics since the 1950s.³³ By contrast, the experience of building a self-sufficient economy with the largest stockpile of weapons was irrelevant for most countries of the world. Military industrialization was known from history, but inspired little interest among economists. Defense economics remained a small and obscure field (Leonard, 1991, pp. 281-2).

The USSR reported extremely high rates of growth in the 1930s, making its growth and development experience worthy of study, if not of emulation. The problems faced by the Soviet economy in the 1920s “have a significance far beyond the period and location in which they took place. Many developing countries today face similar problems: the financing of capital accumulation, the strategy of economic growth in industrialization... politicians and economists first became conscious of such problems in the Soviet Union.” (Nove, 1969, p. 117, 120-121)

This substitution of what is interesting to one’s broader discipline for what was important for the society under study can be seen in Spulber (1964a, p. 23): “The Soviet policy makers’ goal of

³² Fewer than 130 PhDs in Soviet economy were granted from 1949 to 1980, compared to 836 PhDs in economics granted in 1977 alone (Millar, 1980, p. 319; Hansen, 1991, p. 1057).

³³ “Study of growth, balanced or unbalanced, development and dynamic equilibria are all the rage; and it is academically fashionable to conduct empirical studies of “underdevelopment” (Dobb, 1967 [1965], p. 126).

expanding the country's productive capacity, of raising its productivity, and of increasing sharply the level of per capita income recognized the need, now familiar in many underdeveloped areas, to cut through the vicious circle of low total income, low savings, and slow growth, and to secure revolutionary technological changes But the central goal of "catching up with" the most advanced countries was in the case of the USSR tied to a number of other aims – (a) the construction of an advanced industrial and military establishment, and (b) the liquidation in the process of industrialization of all "pre-capitalist and capitalist forms of production" Typically, the volume from which these words are taken is titled "Soviet Strategy for Economic Growth", not "Soviet Strategy for Military Might."

Other themes of interest to the general economic audience were also used to frame the discussion of industrialization. It was presented as a solution to the problem of underutilization of resources, a means of increasing employment in the same league as the New Deal and the Keynesian revolution (Swianiewicz, 1965, pp. 68-69). The existence of fluctuations was the chief concern of a study of Soviet planning and growth through 1932, motivated by the importance of business cycles for market economies, and the socialists' contention that planning would smooth out the cycles (Zaleski, 1971, pp. xx-xxi, 300-304). Wilber (1969, pp. 76-86) suggested that the allocation of a very large share of investment to heavy industry was a "historical example of unbalanced growth strategy advocated by economists such as Hirschman", even though the latter wrote many decades after the XV party congress.³⁴

The same logic determined the appointment of Preobrazhenskii and Feldman as the authors of industrialization strategy. Both were looking for ways to accelerate economic growth, both were

³⁴ In the same spirit, Erlich (1950) is said to have distorted Preobrazhenskii's thought by casting it in terms of Keynesianism, *le dernier cri* at the time (Millar, 1976, pp. 51-52).

original economists whose work was interesting to other economists. Feldman's economic growth model was a pioneering effort in the field that became prominent in the 1950s and earned recognition from western theorists (Domar, 1957). "The first mathematical growth model by a Russian economist, P. [sic] A. Feldman, supported an investment maximizing strategy ..." (Gregory, 2004, p. 83; also Erlich, 1978, p. 203). Yet at the time, Feldman "played a microscopic role in the literature on the Soviet strategy for economic growth." (Jasny, 1964, p. 214).

This tendency to reshape the subject of study to fit the current concerns of one's discipline may be common in the other peripheral, low prestige fields. Thus, a book on Hitler's economic policy states: "The great depression was only an occasion for this policy of centralized planning which itself was motivated by the desire for war preparation. This point is missed by such writers who interpret the slump as the cause of nazi economic policy, and economic recovery as its goal. ... To [reference to a book], Hitler is a Keynesianized promotor of recovery. War as a goal of nazi economic policy is hardly mentioned in the lengthy monograph." Spiegel (1940, p. 714). An example of this bias in another social science is the rush to apply a long series of Western political models to the USSR as described by Engerman (2009, pp. 221, 226).

5.3 Apologizing for the arms buildup

Modern economics has shown little interest in the issues of national security. A volume intended to explore the reasons for this disengagement formulated a list of "tentative hypotheses", which it did not, however, test (Goodwin, 1991, pp. 1-2). Most of the hypotheses are about the reluctance of academic economists to specialize in defense economics. The two potentially relevant to the Soviet economy experts are the low status of the military in the scholarly culture, and politicization of national security issues which scares off middle-of-the-road researchers.

Given this general aversion to military topics, a scholar focusing on defense industry buildup in the first Five Year Plan would appear to cast the USSR in an unfavorable light and distract attention from the country's noble experiment in build a new society. Such an author would be open to suspicion of being a Cold Warrior, taking sides in a political battle, and hence not being a neutral and dispassionate analyst. These reputational hazards are likely responsible the substitution of growth for defense in the accounts of the first Five Year Plan, as well as for the convoluted way in which the military side of industrialization was mentioned.

An economist writing about an armaments industry buildup does not have to elaborate on the intended use of its products. His subject is to find out where resources are directed, how much they costs, and what the economy may be getting in spillovers from this allocation. It is beyond his professional competency to discuss the country's geopolitical position, history, or military doctrine. Economists usually don't do this either, but surprisingly many writers on the first Five Year Plan did.

Western authors connected the Soviet military effort to the USSR's immediate external threats. Erlich (1960, p. 168) supported his denial of the military motivation of industrialization by arguing that the international situation in 1927-28 did not indicate an imminent war, or, if a war was indeed imminent, the first Five Year Plan, with its social and economic destabilization, must have made the country even more vulnerable.³⁵ Those who did acknowledge military motivation argued that, at least according to the Soviet perception, there was an immediate threat of war. This stress on current political events as motivators of defense buildup contrasts with the long view taken by Stalin, who recounted alleged offenses against Russia from the Middle Ages

³⁵ Ulam (1974) made similar arguments, according to Stone (2000, p. 110), who shows them to be unconvincing.

on, and stated that it will take the completion of three Five Year Plans to protect the country against any eventuality (Stalin 1931, pp. 38-39 and 1946).

The only long term reason for the military buildup cited in the literature is the preparation for war with Hitler's Germany - before 1933!³⁶ Nove (1969, pp. 227-8) is perplexed when he sees that immediate external threat cannot quite explain the stress on heavy industry in the second Five Year Plan despite the stated intent to improve consumer welfare. "The basic reasons for this shift are not so easy to determine. They obviously include, as a major factor, the rise of Hitler." However, he notes, similar revisions of targets in favor of heavy industry at the expense of consumers also occurred in 1930, before Hitler, and again under Khrushchev many years later.

The only events of the 1920s and early 1930s that are mentioned to characterize the international situation are the setback of Chinese communists in 1926, the breaking off of diplomatic relations by Britain in 1927, the assassination of Voeikov, and Japanese incursions in Manchuria (Gregory and Stuart, 1986, p. 78). The USSR appears a passive victim in the world arena. And if its actions do not quite fit the mold, the authors vouch for it: "In 1940, the USSR took the Baltic Republics as a (defensive) *place d'armes*." (Hunter and Szyrmer, 1992, p. 140). The standard formula for how the international situation influenced Soviet economic policy is "fear of foreign intervention" or "external threat".³⁷

Connecting military preparedness efforts to perceived immediate threats, or to Hitler's attack 14 years later, as well as the selective accounting of international relations, makes the Soviet military buildup look purely and rationally defensive. This rules out any other kind of intent: the

³⁶ Zaleski (1971, p. 260 fn), Nove (1969, pp. 188, 225), and Munting (1982, p. 87), with Erlich (1960, pp. 168-9) opposed.

³⁷ Boettke (1990, p. 168), Grossman (1974, p. 94), Offer (1987, p. 877), Gerschenkron (1962, p. 147), Hunter (1983, p. 176), Munting (1982, p. 74), Temin (1991, pp. 587-8), Aslund (2002, p. 31), Davies (2010, p. 155). Unusually for this literature, Nove (1969, p. 121) suggests that fears of the plots of Poincare and Chamberlain were partly fabricated.

ideological belief in the inevitability of the eventual showdown with capitalism; lending a helping hand to proletarian revolutions abroad; or just plain old great power aggrandizement.³⁸ Arming in the face of external threats is justifiable, so the author who hurries to cite defensive reasons for the observed buildup inoculates himself from such suspicions and establishes his reputation as a non-Cold Warrior willing to sympathetically analyze the noble experiment. Cautious scholars, appropriately skeptical of the sources within their area of expertise (e. g., Soviet official economic statistics), channeled pure propaganda when they touched on the military aspects of the first Five Year Plan.

6 Conclusion

The account of industrialization dominant in economic literature maintains that, following the strategy developed by Preobrazhenskii and Feldman, it pursued the twin objectives of rapid growth and building socialism. Priority of heavy industry was an element of this strategy, meant to accelerate growth. This paper shows that the standard version ignores massive amount of high level Soviet pronouncements on the objectives of industrialization and the priority of heavy industry and closes the resulting gap in its explanation by conveniently ascribing unusual preferences to the Soviet rulers. Feldman's authorship of industrialization strategy is impossible chronologically, and that of Preobrazhenskii rests on indirect evidence, with plenty of contradictory indirect evidence. (This does not concern Preobrazhenskii's ideas about primitive socialist accumulation, which were not considered in this paper.)

A simpler interpretation of industrialization, contained in the official Soviet pronouncements of the time, is that it was primarily aimed at building up military might. Heavy industry was

³⁸ Curiously, Preobrazhenskii considered a possibility of a military attack on capitalist Europe if revolution there was further delayed (Day, 1975, p. 212).

given priority as the supplier of main inputs into military industry and the foundation of economic survivability during wartime. In this, the Soviets followed a long list of governments intent on augmenting their power, and did not need any guidance from economic theorists. This interpretation does not need to assume the Soviet rulers to be interested in steel and coal for their own sake, and is in agreement with the available evidence.

Soviet secrecy does not explain the origin of the standard version of industrialization, as the evidence against it was readily available. Instead, special circumstances of the Western study of the Soviet economy, a small field with a precarious place within economics, investigating politically charged topics, led its practitioners to gloss over military objectives and to elevate the objective of growth for its own sake.

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