The Reichsmark & The Ruble

A Study of Two Totalitarian Systems And Their Economies In Conflict

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A Thesis Submitted to the Faculty of Graduate Studies in Partial Fulfillment of the Requirements for the Degree of Masters of Arts & Graduate Diploma in Strategic Studies

Graduate Programme in History
Graduate Diploma in Political Science

York University
North York, Ontario

June 1998
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The Reichsmark and the Ruble:  
A Study of Two Totalitarian Systems and 
Their Economies in Conflict  

by  
Neville Panthaki  

a thesis submitted to the Faculty of Graduate Studies of York University in partial fulfillment of the requirements for the degree of  

MASTER OF ARTS  

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Abstract

The Second World War ended more than fifty years ago, however, historians have constantly been learning and uncovering new information about the conflict. This is especially the case for affairs which occurred on the Eastern Front. The Nazi-Soviet conflict is now widely accepted as the main theatre of World War II. Nevertheless, historians are still at a loss to explain the fundamental reasons for the military outcome. This study examines aspects of economics as the basis for military defeats and victories. It is a comparative study of two totalitarian systems as well as their economies. The thesis is divided into two sections and presents findings by way of a parallel study. The conclusion is reached, that the Soviet economy was better able to withstand the stress of war due to its foundations in the pre-war era. The Soviet economy was likewise, better able to propel the Red Army, due to relatively better industrial efficiency and labour productivity compared to the Nazi economy. Therefore, the reader will realize that the basis of military victory was economic power, and that less bureaucracy, forthright industrial planning and the proper allocation of labour represent the basis of economic efficiency and strength.
Acknowledgements

This thesis represents the end product, researched and rewritten over several years. As such, there are many people whom the author wishes to acknowledge for their contributions. I would like to thank Michael Dafoe who taught me at the University of Toronto and allowed me to complete several lengthy essays in preparation for conducting major research of the present topic. I would like to thank Agnes and Allison, librarians at Erindale College (University of Toronto at Mississauga), who were especially generous in extending my lending privileges. I thank Orest Subtelny and Irmgard Steinisch, my thesis supervisors, for their helpful criticism and guidance. I extend this, also to Bill Irvine and Sergei Plekhanov who were members of my thesis committee. Finally, I must acknowledge the support of my parents and my fiancée Karin.
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## Genesis: Economy Born

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Introduction
Introduction: Another History of the War?

Historiographical Debate:

The history of the Second World War is by no means complete. Why Nazi Germany lost the Second World War and how the Wehrmacht was defeated by the Red Army, still pose historiographical problems. I do not suggest that fifty years is enough time to have produced a competent or ‘final’ history of such an all-encompassing event; nevertheless, one finds that matters of the Western front are more or less ‘settled’ whereas the affairs concerning the Eastern front remain somewhat open to interpretation. In fact, the task of scholarship seems more serious because new or previously ignored evidence warrants a complete re-thinking and re-writing of history. In the past ten years there have been comparatively more books published about the Nazi-Soviet aspect of the Second World War than any other topic of military history. More importantly these new works do not simply ‘add’ to our pre-existing knowledge about the Eastern front, rather they alter our image by challenging ‘established’ perceptions.

It is true that a certain amount of blame for the errors of scholarship should be laid upon the Soviet government which restricted bi-partisan access to its archives. However, anti-Soviet ‘Cold War’ rhetoric tended to diminish the efforts of the Soviet

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2 There are three current published works which have “the truth” or “the myth of” in their title.
Union in much of what was written by Western historians between 1946 and 1975.¹ Jürgen Förster mentioned in an article published in 1981, that “the Cold War not only prevented any modification of this picture of the enemy (that of the Soviets), but also provided justification for the German attack on June 22, 1941”. ⁴ Indeed, as Timothy Mulligan stated in the introduction to his book on the German occupation of the Soviet Union, the final outcome of a German defeat (1945) “hardly appeared inevitable to postwar analysts who believed either in Germany’s superior military capability or in the Soviet Union’s greater political vulnerability.”⁵ Of course, there were notable exceptions of historical scholarship liberated from bias such as Alexander Werth’s Russia At War and Alan Clark’s Barbarossa. However, it was only in 1975 after the publication of John Erickson’s monumental work, Road to Stalingrad, that historians began to seriously contemplate and reassess their opinions of the Nazi-Soviet war. What were considered to be the cautious ‘revisionist’ remarks of Erickson, have recently been exchanged for bold assertions by authors such as Richard Overy who states on the first page of his most recent book:

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¹ J. Schulte, German Army and Nazi Policies in Occupied Russia. (Oxford, 1989) pp.3-4. The author notes that much of the work of Historical Division of the US Army’s European Command from mid-1945 to late 1961 “seemed flawed in a way that probably reflected the political predilections of the time more than it did any basic conceptual weakness.” Also see introduction of M. Harrison, Accounting for War: Soviet Production, Employment and the Defence Burden, 1940-45. (Cambridge, 1996)


There is now widespread recognition that the decisive theater of operations lay on the eastern front... For years the Western version of the war played down this uncomfortable fact while exaggerating the successes of democratic war-making... Without Soviet resistance it is difficult to see how the democratic world would have defeated the German empire, except by sitting tight and waiting until atomic weapons had been developed. The great paradox of the Second World War is that democracy was saved by the exertions of communism.6

Deconstructing Mythology:

There are so many long-standing myths about the Nazi-Soviet conflict, that it is difficult to know where to begin the dismantling process. The correction of historical fallacies and exaggerations is an onerous task because it challenges and often displaces conceptual opinion and may thus, draw a disproportional amount of criticism upon the instigator of truth. The primary assumption of 'old school' historical accounts was that the Wehrmacht was the most efficient, best trained and best equipped army of its day. As proof for this assertion one reads about the 'stunning and brilliant victories of the Blitzkrieg' in Western Europe. However, his ego bloated by success and given to megalomania, Hitler made 'fatal errors' of judgement during the Soviet campaign in addition to 'interfering with the skillful generalship of his army commanders'. This lead to disaster and the ultimate defeat of the Wehrmacht as ‘General Mud and Field Marshall Winter’ joined Stalin who was willing to sacrifice ‘space’ and millions of Soviet lives in ‘wave after wave’ attacks to overwhelm the attacker with ‘sheer

numbers'. There are also ample examples of books and articles which support the hypothesis that the Red Army was no more than a product of the backward and barbaric nation which it served. It follows from these accounts that Soviet society did not possess the technological ability to produce, the capability to sustain, or the intelligence to run an efficient economy let alone a war.

By December 1941, Nazi Germany had occupied the richest areas of the European-USSR and deprived the Soviets of their most productive and industrialized regions. Nevertheless, a nation on the verge of economic ruin and military collapse (USSR) was able to defend and ultimately defeat its aggressor. What was so different about the Soviet campaign which did not allow Hitler to repeat his earlier victories? The answer to this question is the focus of the present study. It is intended to advance knowledge and continue in the footsteps of recent scholarship which is now beginning to rewrite and rethink (and in some cases write for the first time) the history of the Soviet home front as well as assumptions about Nazi economic and military superiority during the war era. My thesis will focus upon aspects of the socio-economic conflict between Nazi Germany and the Soviet Union between 1941 and 1945. My approach

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7 Such accounts of the Nazi-Soviet war are largely supported by the memoirs of defeated German commanders.
has been to accentuate and focus upon the economic condition of each belligerent, the mobilization of each economy and the logistic capability of each army.8

Decompartmentalizing History:

Interrelated issues within military history are usually dealt with separately. The majority of scholarship regarding the Eastern front is battlefield history which seldom discusses military matters in an economic context.9 However, as Gerald Weinberg has stated in the introduction of the most recent history of the Second World War, "the processes of a world-wide conflict do not always lend themselves to easy dissection into conveniently separated narratives".10 Perhaps because of the author’s methodology, this is why Weinberg’s A World at Arms (920 pages) is the lengthiest account of the history of the Second World War.11 Economics is usually the basis of military victory, especially in lengthy battles of attrition. Nevertheless, this aspect of warfare has been neglected as if tanks, ammunition and manpower were the sole property and creation of generals. E. H. Carr has written that military might and economic strength are but the determinants of power, and not categories within themselves:

8 "... logistic aspects, questions of transportation and supply, have hardly received any attention." Schüler in Wegner, p.205.
11 Coming in a close second is Martin Gilbert’s The Second World War: A Complete History, published in 1989 with 747 pages of text. However, it should be noted that Gilbert’s approach is redundantly chronological and still somewhat one sided in favour of battlefield history.
The most important lessons to be drawn... is the illusory character of the popular distinction between economic and military power. Power, which is an element of all political action, is one and indivisible. It uses military and economic weapons for the same ends.\(^\text{12}\)

It is for this reason that Martin Kitchen has implored “the next generation of historians” to write the “badly needed” history of the home front.\(^\text{13}\) My study attempts to contribute to this task and rectify this oversight by providing a socio-economic history of conflict on the Eastern front.

Note on Sources:

A few comments should be made concerning the use of sources within this work. The numerous sources consulted within this thesis reflect the multifaceted aspects and considerations of this topic, as well as the lack of consideration (authorship) paid to questions of economy as they pertain to warfare. Hence, the compiling of information for the research of my thesis was a task in itself. A majority of time and effort was spent referencing chapters and often paragraphs of relevant information rather than leafing through a given work on war economy. There are relatively few monograph studies concerned with the economic approach to warfare, and none which take a comparative (Nazi-Soviet) approach. It was often the case that I had to extrapolate from vague references concerning economic questions because the authors of various studies and memoirs simply alluded to economic details in passing or as


\(^{13}\) M. Kitchen, *Nazi Germany At War*, (London, 1995) see introduction and conclusion.
matters of unimportance. In other instances I spent time analyzing details of military accounts in order to establish their relation as part of the war economy. Hence, the reader will note that throughout this work many footnotes consist of double or triple citations. It is because I am trying to indicate that the point I make can be corroborated with more than one source.

References to primary source materials may not always be recognizable through footnotes and the bibliography because much of this information has been compiled, edited and bound in book format by various authors (and in its English translation). Every attempt was made to include the most current literature as well as the ‘standard works’ (if any) written about the subjects covered within this thesis. A supplementary bibliography has been provided which represents items which were consulted but not necessarily cited within the thesis. The reader will note that this supplementary bibliography mostly contains references to the military confrontation which occurred on the Eastern front. As aforementioned, it is awkward and unrealistic (and perhaps an incorrect methodology) to separate the economic and military aspects of warfare. It is important to keep military priorities and the military situation in mind when discussing aspects of economy as they pertain to a nation’s ability to wage war. Since this research was conducted for a Masters thesis, the consultation of German and Soviet archives was not possible. This missing element will most certainly be included within the framework of this author’s doctoral dissertation, for which this Masters thesis provides the
foundation. As a final disclaimer, the author would ask the reader to excuse the broad range of sub-topics covered within this thesis. Rather than an organizational oversight, it is hoped that the reader will attribute this widened focus to a zeal for research and perhaps, also the over-ambition of a Masters student.

Structure of the Thesis:

This thesis is divided into two sections: one dealing with the state and performance of the German economy during war, and the other dealing with the Soviet economic responses to Nazi aggression. In the first half of this study I have concerned myself with three topics: the economic reasoning and basis of ‘Blitzkrieg’, the mismanagement and economic inefficiency with which the Nazis conducted their war effort, and the inability to cope with problems of logistics whether of a military nature or the requirements of an industrial economy. It will be illustrated that ‘Blitzkrieg’ was a reflection of the nature of Nazi politics. The German economy was the object of political intrigue and ideological presumptions which restricted its functionality within a war effort. This affected the quality and quantity of industrial production for war and restricted the Wehrmacht’s ability to conduct operations. Bureaucratic in fighting and a lack of economic centralization resulted in the misuse and misallocation of available resources and labour. One can say with hindsight, although it was also clear to people at the time like Goering, that the German war effort was doomed to fail or at least contained major short comings. Logistics constraints were a major fault and limiting
factor because the German economy could not ‘move’ its industrial produce or manpower in sufficient quantity.

In the second half of this study I have concerned myself with four topics: aspects of Soviet industrialization which created a modern economy prior to June 1941, the salvaging of the Soviet economic assets in the wake of military disaster between June and December 1941, emergency measures and the principle of centralization to resurrect the Soviet economy, and the mobilization of labour and its economic impact for the Soviet war effort. It will be illustrated that the Bolshevik policy of industrialization implemented as Five Year Plans was indeed an important reason why the Soviet Union was able to absorb military defeats. There were elements in Soviet prewar planning which clearly suggested the military nature of the economy. The evacuation of Soviet industries and manpower from the European USSR, to beyond the Urals, provided an industrial base from which the Soviet economy could gradually recover. This recovery was assisted by the economic maximization of the USSR’s remaining labour and resources. As in the Nazi case, the Soviet economy was a reflection of (Soviet) politics. Unique and a heroic chapter in the annals of history, the Soviet war effort was largely due to a human factor which is often ill accounted for and underrated.
I would like to mention that every attempt has been made on the author’s part to represent the Nazi and Soviet war efforts as unbiasedly as possible. However, while remaining objective, the reader may detect a degree of emotionality attached to certain sentences within this work.\(^\text{14}\) Notwithstanding the author’s not too subtle hints throughout the work, the reader shall come to the conclusion that the Soviet war economy out performed the German economy. I beg the reader to take note that assertions such as ‘doomed to failure from the beginning’, in reference to Nazi aggression against the Soviet Union, are not exaggerations. Similar comments were made by members of the Nazi leadership whose responsibility it was to administer the German economy and the war effort.\(^\text{15}\) Here is a case in point, an example of the distorted image of the Nazi-Soviet war. It seems that my comments are inaccurate because of the common view that the Germans were on the verge of victory. Yet far from having historical credibility, such views are largely a figment of the imagination and social construction. This, due to the immediate (1946) distortion of various wartime facts because of Cold War antagonism. Furthermore, artificial realities were also created by German generals whose memoirs Western historians cherished unquestioningly as ‘prime sources’ while the writings of Soviet veterans were written

\(^{14}\) I would like to cite a comment by Richard Pipes from an article written as a rebuttal to those who accused him of ‘emotionality’ in his tirades against the Revisionist school of Russian/Soviet historians (R. Pipes, “1917 and the Revisionists” The National Interest No.31, Spring 1993, p.68.). The author noted that perhaps if his critics were more emotional, that is felt a conviction for what they wrote or had some emotional attachment to the subject matter, that they might ‘get it right’. While I do not agree with a lot of what Richard Pipes has written, I applaud the idea behind the aforementioned statement.
off as tainted works of ideological propaganda. Peter Tsouras, in his introduction to a series of books which contain the comments of German generals who fought on the Eastern front, states that the reader should be weary.\textsuperscript{16} Therefore, it is more true to say that the charge of bias and exaggeration should be leveled against such people.\textsuperscript{17}

**Importance of this Study:**

A final word concerning the importance of this work is necessary. There are many reasons why *The Reichsmark and the Ruble* represents a valid thesis topic that contributes to historical scholarship. This study, in dealing with two economies in conflict, has simultaneously illustrated a comparison between two totalitarian systems. As a comparative study of two totalitarian states and their respective ability to wage war, this is a pioneering work. It contributes to the intellectual *perestroika* concerning the Soviet war effort while highlighting the misperceptions of the conflict on the Eastern front and Hitler's war machine. As a reference source, this work has collected and collated much of what has been written in English regarding the topics under consideration within this study. As aforementioned, history cannot easily be compartmentalized into separate studies due to the integrated nature of the historical process, the cause and effect of action and reaction. Hence, the present study may

\textsuperscript{15} This is amply footnoted throughout the thesis.

\textsuperscript{16} An example of such a comment are continuous references to Soviet soldiers as “barbaric, Asiatic mongrels”. This is the reason behind Soviet valour and stubborn resistance.
effect scholarship in other fields of historical investigation such as: the military history of the Western front\textsuperscript{18}, the socio-economic history of Weimar Germany\textsuperscript{19}, the perception of the Russian revolution and Bolshevik domestic policies\textsuperscript{20}, and maybe even the image of Stalin\textsuperscript{21}. Therefore, my thesis is not just simply, another history of the war.

\textsuperscript{17} I would also like to point out that the introductions to many US Historical Series documents and interrogations also contain warnings to the reader. Many editors note that German contributors engaged in ‘battles on paper’ against former colleagues and to exonerate themselves.

\textsuperscript{18} If German economic and military preparations were poor or inadequate, does this change the reasons for the collapse in the West 1939-1940?

\textsuperscript{19} The negative image of Weimar, its decadence and sterility may change in the light of objectivity vis-à-vis the socio-economic ills and stagnation of Germany during the 1930s.

\textsuperscript{20} Especially when comparing this era with the rest of Russian history. Can it be said that the Bolsheviks represented an element of modernity? Should the industrialization process be heralded as one of the factors which saved Russia from Nazi enslavement and ultimately helped save Europe from further torturous years under the Nazi boot?
The Reichsmark
'Blitzkrieg': The Economics of Necessity

Introduction:

'Blitzkrieg' has always been heralded as the military counterpart and proof of German efficiency and planning. Nevertheless, this long accredited 'military doctrine' was ultimately responsible for the Wehrmacht's defeat. 'Blitzkrieg' was not the choice of military genius but the product of economic necessity. 'Blitzkrieg' was a reflection of the poor state of the Nazi economy and the inept way in which it was run. It was the only viable option for a German leadership bent upon waging war. One of the crucial determinants of victory during the course of any conflict is the efficient use of a nation's economy. However, the Nazis armed "in width and not in depth" meaning that the pre-war German economy was organized to create a highly armed military without adequate preparations for an armaments reserves. No allotment was made in Nazi economic and military plans to replace soldiers or equipment. Throughout the entire period of the Nazi-Soviet war the Wehrmacht's military maps were devoid of reserve

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21 His image has caused historiographical debate for some time now. In particular, the role of Stalin as 'Generalissimo'.
23 According to the minutes of a conference at Karinhall on January 30, 1940, General Thomas of the Wirtschafts und Rüstungs Amt (planing division OKW) reported that Goering and Hitler thought that "the best way of building up stocks is the building up of stocks not of raw materials but of finished war material... it was decided to use our reserves of raw material without regard to the future..." J. Noakes, et al., Documents on Nazism, 1919-1945, (London, 1974) p.631.
formations. The Nazis planned for a short and easy fought victory, not the long-term war of attrition that became the Second World War.

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24 Weinberg, p.266.
Economy as a Reflection of Politics:

Hitler's aim to achieve autarky for Germany was far from completion in 1939. In that year the Reich still imported: 70% of all its iron ore, 80% of its copper, 65% of its petroleum, 50% of its fibres, 45% of its hides and pelts, and 100% of its nickel, manganese, and chrome. By June 1940, the USSR had become the leading supplier of grain and held second place for the supply of oil and timber to Germany. More importantly it was the Soviet Union, which Hitler would attack in June 1941, that supplied the Reich with half of its total essential war supplies such as bauxite, copper, tin, lead, nickel, and rubber. Hitler possessed no economic policy per se, he simply allowed industrial production to return to its pre-depression levels rather than attempt a reorganization of the German economy. After the seizure of Czechoslovak (and later the capture of French) armaments and industry, Hitler was confident that Germany possessed all that it needed for a short war. "The stock-piling of the raw materials of war was, in Hitler's passion for finished war-goods now; discouraged rather than furthered." Before the commencement of hostilities in 1939, Hitler actually reassigned

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28 Graham et al., p.20
29 ibid., p.13. (author's underline), and Kroener in Wegner, p.142.
many essential resources necessary for war production, to the German civil economy.\footnote{30}  Hence, no measurable progress was made in the war economy between 1939 and 1942. 

Indeed in the Autumn of 1941, shortly after his attack on the Soviet Union, Hitler authorized a decrease in Nazi arms production.\footnote{31}  Previous to that, as General Halder notes in his diary entry of July 8, 1941, Hitler prohibited the delivery of replacement to tanks the Eastern front.\footnote{32}  His confidence in forecasting the imminent Soviet defeat was such that, Hitler had transferred the bulk of the Luftwaffe to the eastern front without an overhauling of its equipment after the Battle of Britain.\footnote{33}

American and British economists who compiled a report entitled \textit{The Effects of Strategic Bombing on the German War Economy} in 1946, concluded that:

The outstanding feature of the German war effort is the surprisingly low output of armaments in the first three years of the war...For these early years the conclusion is inescapable that Germany’s war production was not limited by her war potential--by the resources at her disposal --but by demand; in other words, by the notions of the German war leaders as to what was required for achieving their aim.\footnote{34}

\footnote{30}  This is illustrated by a graph in Di Nardo, \textit{Germany's Panzer Arm}, p.27 which attests to haphazard tank production.
\footnote{31}  This was also related to a decision reached during the OKW meetings from August 14-16, 1941, to reduce panzer output from 900 to 650 per month. The Luftwaffe flak program was also restricted due to manpower and materials shortages. K. Reinhardt, \textit{Moscow-Turning Point}, (Oxford, 1992) p.40.
\footnote{33}  Cecil, p.146. and Halder, pp.231-232,297.
\footnote{34}  Stopler, et. al., p.163.
It should be mentioned that Hitler did have two valid reasons for avoiding full-scale German economic mobilization. An avid reader of history, Hitler also learned by experience that the lack of bread causes revolution. He had witnessed the chaos of 1918 when civil insurrection threatened to bring down the German government, and he later used the popular discontent of Germany’s poverty to rally the nation around the Nazi Party. It did not take much imagination for Hitler to envision what might happen should the Nazi war effort undermine the German public’s high standard of living. Hence, even though fats and butter were rationed in Germany from August 1939, German rations remained the highest of any of the European belligerents until 1945. In fact, there was a gradual improvement in the German standard of living until 1943.

Hitler’s second reason for avoiding full-scale economic mobilization was a result of his manipulation of Nazi politics in order to maintain power. Hitler dreaded conspiracy from within the Nazi party as much as he feared a revolution from the masses. His method of maintaining leadership was to encourage and exploit the rivalry of his associates. There was “a tendency to always promote opposition in order to create conflicting forces in domestic politics.” Indeed, Hitler detested most of his generals and preferred to work with them on an individual basis so as to exert the maximum

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*The order to mobilize the economy did not come until after the Western Powers declared war in September 3, 1939. Kroener in Wegner, p.138.*

*U. Herbert, Hitler's Foreign Workers. (Cambridge, 1997) p.41.*

*Weinberg, p.471.*


influence upon military decision making.\textsuperscript{41} This is why Hitler rejected General Keitel’s suggestion that Erich von Manstein be appointed the Chief of the General Staff of the Armed Forces. Hitler feared opinionated and individualistic men so Fritz Halder, a man who lacked convictions and possessed a weak personality which Hitler could manipulate, was given the job.\textsuperscript{42}

Officers of the economic planning division of the army (\textit{Wehrwirtschaftler}) made regular and diligent reports which were ignored by Hitler.\textsuperscript{43} An example of Hitler’s disregard for army concerns and economic planning can be illustrated from the initial campaign of the war. As the Wehrmacht invaded Poland, the objective of Major Erich Will’s ‘Oil Commandos’ was to have been the Galician oil fields, an area of 600 square miles. Each participating member of the mission had been selected for his technological knowledge concerning some aspect of the oil industry, Will being directly responsible to the economic section of OKW (\textit{Oberkommando der Wehrmacht}).\textsuperscript{44} However, Hitler neglected to debrief Will and other military officers about the Nazi-Soviet secret agreement concerning the division of Poland. Indeed, when General Alfred Jodl was informed by his aide that the Red Army was fighting in Poland, the bewildered

\textsuperscript{40} A. Speer, \textit{Infiltration}. (New York, 1981) p.3.
\textsuperscript{41} A. Wilt, \textit{War from the Top: German and British Military Decision Making During World War II}. (Indianapolis, 1990) pp.4,26.
\textsuperscript{42} Keitel refers to this as the “Hitler-Halder regime”, Keitel, p.165.
\textsuperscript{43} Graham et al., p.11.
\textsuperscript{44} R. Goralski, et. al., \textit{Oil and War: How the Deadly Struggle for Fuel in WW II Meant Victory or Defeat}. (New York, 1987) p.27.
commander had to ask "against whom?" The Oil Commandos who were attached to 22 Corps were just as shocked when, after capturing the refineries at Jasle on the west bank of the San River, they found the Soviets occupying Winniki which was on the river's east bank. Winniki had actually been the prime German objective because its 2273 wells produced 70% of pre-war Poland's oil.

Inefficiency and bureaucratic chaos was tolerated and even fostered by Hitler in an attempt to ensure that no one person or agency of state power could grow strong enough to threaten his personal leadership. Hitler allowed the German economy to become the battleground for protracted Nazi leadership struggles, both interagency and intra-agency:

Each senior Party comrade worked against the other comrades so as to become if not the *de jure* then certainly the *de facto* second man in the Reich....There was no control at the centre of power to wrest the privileges and the opportunities for exploitation from the hands of individual Party leaders and place them at the disposition of the nation, except by Hitler, and he would not act.

At any given time the Nazi war economy had ten or more independent organizations or personalities trying to manipulate resources and raw materials for production: Funk's Economic Ministry (*Reichswirtschaftsministerium, RWM*), the War Economy and

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46 *ibid.*
The German economy became further decentralized because each military commander was at his discretion to deal with economic matters on his sector of the front. The parallel chain of economic command which resulted left the jurisdiction of many agencies undefined. Economic and administrative confusion ensued as various organizations began to issue conflicting orders. This struggle for power and jurisdiction between Nazi economic agencies has been termed “authoritarian anarchy”. The multiple economic agencies and what they did “remained mystifying even to those appointed to administer the system”.

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50 In a memo dated September 5, 1939, Schnurre (General Gouvernment 'of Poland') indicates his displeasure with Goering, and urges the Foreign Ministry to remind the latter that Soviet economic negotiations are the realm of the Foreign Ministry. and *Documents on German Foreign Policy 1918-1945: Series D (1937-1945), Volume 8*, (Washington, 1954) p.78.
51 One of the most frustrating research aspects of the Nazi war economy is defining the multitude of economic terms: *Wehrwirtschaft* (defence economy), *Kriegswirtschaft* (war-economy), *Wirtschaftskrieg* (economic warfare). Many of these terms originated as euphemisms of the Versailles era. B. Carrol *Design for Total War* (The Hague, 1986) pp.40-41.
52 Weinberg, p.477... See footnote # 23.
53 Dallin, pp.98-99,313.
Indeed, corruption was the only “central organizing principle” of the German economy. Every influential Nazi official with an interest in the German economy had an ‘economic department’ which advised him on how to best exploit the resources and wealth under his control. The paramount example is Heinrich Himmler who controlled the economic empire of the SS in “Occupied Areas East” (Poland and the occupied USSR). The Economic and Administrative Department of the SS, (the SS-Wirtschafts- und-Verwaltungshauptamt), controlled over 150 firms in all spheres of production including the extraction of mineral water. Robert Ley who controlled the German Labour Front and Walter Darré who was in charge of the Reich Food Estate, also built their own personal empires using their respective organizations. Neither man was subject to public audits or had been provided with a legally defined status within Nazi government bureaucracy. Officials in charge of foreign labour camps hired labourers to private firms or wealthy industrialists at the price of one packet of cigarettes for each male and half a packet per female worker.

“Commissioners” were assigned the responsibility of performing most ministerial duties since leading Nazis were often busy constructing and defending their personal economic empires. However, rather than operate as a sub-ministry or civil service, the Nazi commissioners added to the existing bureaucracy by creating separate and parallel

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56 Grunberger p.103.
organizations for every ministerial job. Commenting on this situation in his diary on December 16, 1942, Goebbels wrote:

> We Germans just don’t know the art of running a large people or a large country from a few key position. We are much too thorough and are always in danger of administrating instead of leading, and of installing a bureaucracy instead of building up a mere supervisory apparatus. This case (occupied USSR) proves it.\(^{58}\)

Furthermore, these positions were often filled with the cronies of rival ministers who wished to undermine the authority of their colleagues.\(^{59}\) This lack of ministerial authority and control allowed petty officials to continually ignore written orders so long as they were not countersigned by Hitler.\(^{60}\) Hence, in order to preserve their existing power and defeat challenges to their rank and influence Nazi leaders perpetually strove to accumulate new posts and a higher degree of influence with Hitler. This economic competition for the material resources of production caused infinite problems for industry. Manufacturing quotas would rise and fall proportionally to which bureaucratic institution was in control (or more control than the rest).\(^{61}\)

\(^{57}\) ibid., p.111.


\(^{59}\) B. Klein, *Germany's Economic Preparations for War*, (Massachusetts, 1959) p.149, and Suchenwirth, pp.6-9. (re: conflict between Hermann Goering and Erhard Milch)

Enter the Wizard (Resources and Labour as Limiting Factors):

After the death of Fritz Todt in February 1942, Albert Speer was appointed the Minister of Armaments and Munitions. At Speer’s insistence, Hitler set up the Amt für Zentrale Planung (Central Planning Agency) on April 15, 1942, in order to place the allocation of raw materials in Speer’s hands. Speer was also supposed to gain control over: existing manufacturing plants and the erection of new ones, the apportionment of raw materials (iron and metal) to the various requisitioners, the distribution of coal and energy, and the coordination of transport requirements in connection with the aforementioned responsibilities. What seemed a helpful gesture was nonetheless the creation of a parallel bureaucracy which remained largely ineffective because the Reich’s other economic agencies continued to exist and voice demands through their influential Nazi champions. Admiral Dönitz maintained his authority over Naval production until mid-1943, while Hermann Goering controlled aircraft production until March 1944. The vast economic holdings of Himmler’s SS, within the Reich and in the

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61 Speer notes that, “I was ruled by the constant fear of losing the Führer’s goodwill and hence also the task he had assigned to me.” Speer, Infiltration p.9.
62 A. Speer, Inside the Third Reich, (New York, 1970). The triumvirate consisted of Speer, Luftwaffe Field Marshal Erhard Milch and Paul Körner who was ‘State Secretary’ and an official of the Four Year Planning office. Noakes et. al., p.645.
63 Noakes, et. al., p.645.
64 The War Economy and Armaments Branch of the Wehrmacht was incorporated into Speer’s ministry to avoid the latter’s complete impotence in the economic realm. However, it more or less made Speer a spokesperson and tool of the Wehrmacht’s production needs. Only later, in 1943, did Speer succeed in ousting Georg Thomas (Wi-Ra-Amt) from the Speer Ministry.
occupied territories, never fell under Speer’s jurisdiction. Furthermore, the Luftwaffe, the Kriegsmarine, as well as other organizations with economic branches, were not subject to Speer’s authority. Additionally, each of the armed services had pre-existing “relations” with “chosen industrial facilities” and greedily attempted to assert their rights to the “production capacity of such facilities exclusively for itself.”

The Nazi priority was war, so Speer maintained the Wehrmacht’s priority to available materials but himself decided which factories would be given the manufacturing contracts. Thus, Speer’s biggest accomplishment was to eliminate competition between the various producers of war materials and to monopolize production under the management of civilian administrators. However, although production was eventually centralized, there were no agreements among the various requisitioners. For example, the output of the converted watch industry (which produced ammunition, fuses, measuring instruments, and machine parts) belonged to twelve different committees, task forces, industrial groups, craft and subsidiary

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65 The resources and manpower wastage by Himmler for his personal projects was enormous, and did not translate into any substantial involvement with “armaments and wartime production”. Speer, Infiltrator, pp.5,21.
66 Graham, et al., p.22.
67 Ibid., p.43.
68 Stopler, et al., p.166. Speer introduced the concept of “self-responsibility” in industry. He set up “committees” which were in charge of producing the finished items such as tanks, and “Rings” which overlooked the production and distribution of component parts such as gears and ball-bearings. Graham et al., p.45. and Carrol, p.288.
69 “... parts of the products meant for the army might, without proper supervision, be siphoned off for SS units...” Speer, Infiltration, p.21.
groups. Even when there were enough raw materials to manufacture a product it did not ensure that the designated factories would receive supplies. The allocation problems of the Reich were due to a crude priority system which reflected the disarray of the German economy and its lack of central planning. In 1939, there were two designations for resources being transferred to essential war industries: ‘S’ (Sonderstufe) and ‘SS’ (Sondersonderstufe). Materials pre-marked with these designations were held in reserve or as quotas for industrialists who manufactured war materials. However, due to the competition between manufacturers and their Nazi patrons, it was soon discovered that all available resources were either marked ‘S’ or ‘SS’. Instead of resolving the problem by organizing and directing production, the ‘S’ and ‘SS’ designations were replaced (or more aptly, superseded) by ‘SSS’ and ‘SSSS’!

Klein has remarked:

The creation of these categories was followed by a general priorities ‘inflation’ in which the priority number given to a particular manufacture was little more than license to hunt for steel.

In March 1942, Speer wrote a letter to Hitler in which he stated that such chaos in the steel industry directly related to the Wehrmacht’s failure in Russia during the winter of 1941-42. Speer concluded that the amount of steel reaching war industries

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70 Stopler et al., p.166.
71 Klein, p.127.
72 Suchenwirth, p.55.
73 Klein, p.127.
had actually dropped from 46.5% of total output in 1940, to 37.5% in 1942 (1940 figures).\textsuperscript{75} Speer reported that each war manufacturer had to deal with a constant backlog of 15 million tons of steel over a period of twelve to eighteen months.\textsuperscript{76} Many factories manufacturing war equipment were closed because of a steel shortage while other business men and industrialists hoarded fifteen months worth of steel supply as their safeguard to inflation.\textsuperscript{77} Speer concluded:

That in spite of professed shortages, manufacturers were in general fabricating less steel than they received; and that a much lower percentage of steel was going for war needs than had been the case in WW I.\textsuperscript{78}

It was also the case that piles of munitions lay idle and undelivered in warehouses because manufacturers did not want to surrender their surplus (or receive a low price) to Wehrmacht requisitioning offices.\textsuperscript{79} Although German steel production had slightly increased, the output was diverted from the war effort to non-essential consumer industries.

Resistance to Speer's attempts to mobilize the German economy was not limited to Hitler and competing economic agencies. It was in the interests of industrialists and

\textsuperscript{75}Lucas, Reich! p.162. Halder notes in his diary entry of December 23, 1940, that General Fromm of Home Army Rear (OKH) reported "Steel quota for the army has been drastically reduced. Present production figures can be kept up till beginning or middle of March, then will drop." Halder, p.308.
\textsuperscript{76} Klein p.127. and Speer, Inside the Third Reich p.113.
\textsuperscript{77} On the hoarding of supply and fuel, one Luftwaffe officer dealing with the airlift of supply to Stalingrad has noted that "based on our experiences, we knew that all these units had reserves — especially of fuel that weren't registered." Kershner, in Steinhoff, et. al., Voices from the Third Reich: An Oral History. (New York, 1989) p.162.
\textsuperscript{78} Klein p.128, and Speer, Inside Third Reich, p.119.
individual manufacturers to continue the production of consumer goods. Profits from the sale of war materials were usually invested into consumer production to secure the manufacturer from inflation, and to avoid liquid assets of worthless paper money. It was therefore, a common practice for manufacturers to produce a variety of goods rather than specialize; and given the opportunity, more consumer goods were manufactured. This re-channeling of money and resources was possible because the lack of central planning in the Nazi economy allowed individual plants (whether war producing or civilian) to determine what and how much was manufactured. Nitrogen for example, a “chief wartime chemical” used for the production of ammunition and explosives, was depleted in Germany long before 1945 because manufacturers decided that it was in their interest to produce fertilizer instead of munitions. However, part of the hesitation of manufacturers to commit to the war economy was due to the armed forces mismanagement of its own requirements:

The military authorities were always shifting their demands, and it was desirable form the manufacturer’s point of view not to be committed entirely to a program which, in any item and at any at any time, might be cut back. He therefore was eager to take on the production of several rather than merely one of the items and to have a back-log of civilian goods production as well. It was more profitable to produce peace then war goods, and every possible plea was used to justify their output.

81 Berghahn, Modern Germany. p.139.
84 Graham, et. al., pp.26-27.
While total Nazi military expenditure rose from RM 30 billion in 1939, to RM 90 billion in 1942, half of the latter amount was spent for the production of consumer goods. In fact, only half of every annual Nazi budget can be traced as military expenditure. It seems likely therefore, that the ‘missing’ half of each budget was either absorbed by the civilian economy or ‘lost’ in the personal empires of individual Nazis. There can be no other logical explanation because the non-traceable revenue does not show itself as being carried over to the next fiscal year, nor is it accountable as a redirected payment. Even the listing ‘war expenditure’ is elusive because in Nazi terminology it could designate the construction of a highway, public-works project or renovations at Berchtesgarten. Hence, even though Speer “got control” of the “production” of consumer goods from the Ministry of Economics in 1943, the manufacture of civilian goods still continued throughout the occupied territories while their “distribution” remained the prerogative of the Ministry of Economics.

Regarding this neglect to fully mobilize the German economy, the Effects of Strategic Bombing on the German War Economy report states:

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85 Wright, p.119.
86 Klein, p.91.
87 Speer, Inside the Third Reich, p.233.
It must be emphasized that throughout this period the German economy met the limited demands placed upon it, not only without evidence of strain, but also without controls. The Wehrmacht supply offices were, until well into 1942, Germany’s only war mobilization agencies and exercised power only over munitions production enterprises. They had no control over the bulk of the economy, which was permitted to operate in a leisurely, semi-peace-time fashion under the loose supervision of Funk’s Economic Ministry.\(^89\)

The following production figures from 1942 to 1944 illustrate the wastage of the Nazi economy: 4800 tons of hair tonic, 12 000 tons of wallpaper (in 1943 alone), 4.5 million scissors for the Wehrmacht, and 106 million pairs of shoes per year for civilians.\(^90\) The annual production rate between 1942 and 1944 of household pottery equaled 190 000 tons. For the same period, the production of drinking glass containers was 550 million per annum while preserving jars averaged 148 million per annum. The output of silk and velvet woven products was 61 million metres for civilians and 59 million metres for the Wehrmacht. While soldiers on the Eastern Front were freezing, the annual wool production for civilian clothing averaged 52 million metres. Interestingly enough, the annual 65 million metres of wool which was supposedly delivered to the Wehrmacht is unaccounted for in Nazi records.\(^91\)

Resources were also wasted by individual Gauleiter (regional officials), to build private bunkers and beautify their surroundings.\(^92\) Speer’s attempt to mobilize the economy could not produce maximum results so long as his orders were disobeyed and

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\(^89\) Stopler, et. al., p.163.
\(^91\) Milward, The German Economy at War, pp.107-108.
ignored at the regional level. This is a prime illustration of the State-Party rivalry which fostered ‘dual power’ and parallel bureaucracies within the Reich. The Gauleiter appealed every order by Speer, to Bormann who gladly supported the Gauleiter against Speer. One of the reasons why there was a shortage of labour to repair the damage done to workers’ housing by allied bombing, was that those employed in reconstruction were kept busy with one or another Party building. Apart from diverting badly needed labour from the arms industries, the Gauleiter also fostered conditions of artificial unemployment within their respective Gau. Citizens who resided within one Gau were often forbidden to work outside its borders because each Gauleiter wanted to deprive his rival of labour which might be used to beautify or maximize the rival’s municipality.

Another reason for Speer’s failure to co-ordinate and centralize the German economy was that he did not possess complete control over the allocation of labour. Besides the strain on resources, the shortage of labour (acute shortage of skilled labour) was the other limiting factor of the war economy. Keitel writes that the labour crisis

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92 Graham et. al., p.6.
93 Noakes, et. al., p.672.
94 ibid., pp.652-653.
95 Lucas, Reich! p.159.
96 In May 1942, Speer thought that he had received Hitler’s backing to force Himmler to either, relinquish control of 12 000 labourers for truck production or for Himmler to hand over 2000 trucks a month. Speer notes that in July 1944, Himmler had still not exercised either option! Speer, Infiltration, p.19. and Herbert, p.158.
97 Graham, et. al., p.35. and Speer, Infiltration pp.31,47. and Herbert, p.146. and Noakes et. al., p.643.
interfered with the Wehrmacht’s organization. “The non-combatant troops of the supply echelons, the army’s ‘tail’ which were radically cut back”, had to be absorbed as recruits for front-line duties.\textsuperscript{98} The acute necessity and struggle for German manpower can be gauged by the following remark:

In February (1942) I had to force a new Programme on Speer, the Reichsminister for Armaments and Munitions...; The Programme called for the immediate release for front-line duties of a quarter of a million Army troops who had been made available for munitions production. That was the beginning of the struggle for manpower, a struggle (with the civil authorities of the war economy) that was never to end.\textsuperscript{99}

In 1942, there were 3.8 million fewer persons employed in German economy compared to 1939. This was despite the addition of 3.8 million foreign labourers, a figure representing 15\% of the total Germany work force in 1942.\textsuperscript{100} This amounts to a 10\% reduction in the German labour force between 1939 and 1942.\textsuperscript{101} Yet, the Nazi Ministry of Labour did not take any measures to remedy Germany’s labour shortages despite having unlimited powers (which extended to regional labour offices) to conscript all adults for work of “national importance for an indefinite period.”\textsuperscript{102} Indeed, Funk and Goering believed that the maximization of German labour for the war economy had occurred in 1939. Until 1943, there was considerable labour autonomy.\textsuperscript{103} Another

\textsuperscript{98} Keitel, p.169.
\textsuperscript{99} ibid., p.168.
\textsuperscript{100} There were slave labour camps in every German town, foreign labourers making up anywhere between 20 to 80 percent of the work force in each town. Weinberg, p.476. and Graham, et. al., p.35. (“the majority” or a “very high percentage”.
\textsuperscript{101} Klein, p.136.
\textsuperscript{102} Kitchen, p.138.
\textsuperscript{103} Graham, et. al., pp.35-36.
illustration of "bureaucratic anarchy" is that Hitler's attempted 'solution' was to appoint Fritz Sauckel to the newly created post of Commissioner for the Mobilization of Labour, in March 1942.

The Nazis never made any sincere attempts to mobilize their close to 50% female population. Measures such as the Compulsory Labour Service (1939) for single, widowed or childless women between 17 and 25 years of age, were more a means of deterrence to force German women to marry and raise children. No effort was made beyond the spirit of the law to encourage women to seek employment. On the contrary, the generous dependency allowances and other benefits given to soldiers wives actually prompted women to withdraw from the labour force. Indeed, Sauckel's first act as the Commissioner for the Mobilization of Labour, which he called "his most urgent task", was to conscript 500,000 Polish and Russian women as Hausfrauen. The Reich's most influential woman, Eva Braun, made certain that Hitler provided enough electricity for the hair salons and the cosmetics industry so that

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104 The majority of German women who were employed in the Nazi war economy found work as maids for middle and upper class families. Weinberg, p.471. (The author says "millions"). and Graham, et. al., p.34. "At the beginning of the war 3.5 million unemployed women..." Herbert, p.41.
106 On September 7, 1939, the Labour Ministry prohibited married women from being mobilized. On April 20, 1942, Sauckel passed an edict, concurring with Hitler's view against women in the workforce. The ideological reasoning behind this was that German women should be "protected from moral and mental harm" in order to function 'efficiently and effectively' in their capacity as bearers of children and guardians of the race. Noakes, et. al., pp.633,631.
German women could beautify themselves. Only in 1943 did Hitler see any need to ban the production of new hair rollers, and he thanked the German women for their sacrifice. One of the most bitter ironies of Nazi society was:

that the factories lacked personnel, but there were still more than a million housemaids in Germany. And those servants did the house-work for their perfumed, coiffured and cake-eating mistresses.

Finding the Reich’s factories were grossly over-manned, Speer was able to re-direct 500 000 people into new assembly jobs without impairing production levels. Other reasons for poor economic performance was that most German factories only ran a single shift per day until 1944. Only 10% of those employed in the labour force (1944) were working a second or third shift. Through the re-direction of labour Speer raised ammunition production by 55% in the space of five months, from March to July 1942. Between November 1942 and May 1943, when Speer concentrated his efforts upon tank and aircraft production, output was raised by 250% and 60% respectively. Speer also limited the production of different weapons designs which maximized the total labour and raw materials employed for war production. Assault guns for example, were used to perform the tasks of the expensive Tiger or Panther

\[\text{References}\]

108 Lucas, Reich p.160.
109 Ibid.
110 Memorandum of Colonel Helder (Wi-Ra-Amt OKW), March 1942: “there are still far too many workers per production plant.” Noakes, et. al., p.643.
111 Speer, Inside the Third Reich, p.163.
tanks with far less cost and greater maintainability.\textsuperscript{114} Speer's limited efforts raised war production by 230% between 1941 to mid-1944, with only a 28% increase in employment within the war economy and a 50% increase in the supply of iron to manufacturers.\textsuperscript{115} The conclusion is that "whatever the efficiency of Speer in any absolute sense the results he obtained are conclusive proof of the inefficiency of the preceding organization."\textsuperscript{116}

\textsuperscript{112} Stopler, et. al., p.167. also see Speer, Infiltration pp.66-67.
\textsuperscript{114} ibid., p.169.
\textsuperscript{115} ibid., p.169.
\textsuperscript{116} ibid., p.168.
Conclusion:

The implementation of “total-war” would have necessitated the complete overhaul of Nazi politics which treated the German economy as a personal possession rather than an instrument for war:

When Blitzkrieg failed it became necessary to have a Ministry, and a Minister, of War Production with overriding powers. This proved very difficult to achieve because by 1942 the entire German administrative body was one of competing individuals with vested interests. Each was unwilling to relinquish control, whereas the Blitzkrieg economy had imposed no need for rationalized efficiency.\(^{117}\)

The German economy was disadvantaged because Hitler was prepared to appease his antagonists (the public and party officials) with consumer goods and individual empires of territory and property, at the expense of war production. Speer writes:

> It was one of the most surprising developments of the war that Hitler wished to spare the German people those trials and burdens which Churchill and Roosevelt had laid without hesitation upon their people.\(^{118}\)

In fact in 1942, the production of consumer goods was only 3% less than it had been in the pre-war era while the production of guns was only one quarter of the amount it had been in 1918.\(^{119}\) In every sector of the German economy fierce competition existed for the means and output of production. A consequence of unregulated production was that, scarcity and abundance existed side by side:

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\(^{116}\) Graham, et. al., p.24. (author’s underline)

\(^{117}\) Milward, *The German Economy at War*, p.10.


There was confusion of purpose, conflict of authorities, unresolved disputes, lack of overall planning, or a failure to use it, and the organization scheme was much more impressive on paper than in operation.¹²⁰

Although Speer’s efforts to correct deficiencies and economic wastage yielded some results, an overall benefit to the German war effort was obscured by economic abuse on the part of various industries and individual Nazi with their bureaucratic administrations. The reality of decentralized Nazi politics translated into economic inefficiency and chaos. Hence, in the final analysis Speer’s efforts proved stop-gap measures rather than long term economic solutions. The Nazi leadership also displayed an arrogance and ignorance of their economic situation which doomed their war effort to failure. Rather than a pre-planned strategy based on economic capability, the Nazis relied on racial theories and military gambits. ‘Blitzkrieg’ was the logical military corollary to the deficiencies of economic planning. ‘Blitzkrieg’ was an economically convenient way of preserving the fundamental weakness of the German economy from the ravages of modern warfare. It was a method in which a mediocre nation could wage war as if it were such a Great Power.¹²¹

¹²⁰ Graham, et. al., p.42.
The Mismanagement of War

Introduction:

The lack of coordinated economic and military planning for an operation such as Barbarossa allows one historian to express his sarcasm thus:

As the commanders’ whistles blew on 22 June 1941 the two von Moltkes, von Schlieffen and Ludendorff must, sedately and simultaneously, have turned in their graves.122

One of the reasons for this was that Hitler and the military balked at the thought of civilian administrators attempting to brief generals about the military possibilities of operations in regard to industrial support capability. Hence, “the criterion (of campaign planning) was one of military and not economic possibility.”123 For ‘Blitzkrieg’ to have succeeded in the USSR, the Wehrmacht would have had to conclude its operations within six weeks.124 However, when the Soviets continued to resist past September 1941, ‘Blitzkrieg’ was doomed because the German economy was not prepared for a war of attrition. In addition to a crippling resource and labour deficiency, the German economy was hindered by the inadequate employment of what it did possess. The bureaucratic rivalry mentioned in the previous chapter contributed to the decentralization of the economy and resulted in a lack of coordination between military requirements and industrial output. Furthermore, Nazi ideological suppositions hung

121 Milward, The German Economy at War, p.9.
123 Milward, The German Economy at War, p.32.
over German military and economic planning like a lingering illness and often clouded reality.

\textsuperscript{124} By September 1941, all available forces of the German Replacement Army (reserves) had been
To Reach the 'Promised Land' (Oil and Coal):

Although economic considerations were not the only reasons for Hitler’s invasion of the USSR, they represented “the Alpha and Omega of Germany’s occupation policy”.\(^{125}\) According to a memorandum by General Thomas (planing division OKW) dated June 20, 1941, Minister Todt and General Keitel were told by Hitler that Germany’s quest for autarky had failed because its plan was too ambitious. Hence, military campaigns of conquest were required to provide the Reich with the raw materials and resources necessary to sustain war.\(^{126}\) Hitler hoped that Soviet oil wells would fuel German industry and the war effort.\(^{127}\) Yet the dilemma which the planners of Barbarossa faced was that the target wells of the USSR were 1500 miles away from Reich territory.\(^{128}\) Hence, nearly all of Germany’s available oil would have to be used to fuel a risky campaign, which if unsuccessful would cause the collapse of German industry.\(^{129}\) Most Nazi planners estimated that 65,000 barrels of oil a day would be required to sustain the hypothetical 150 German divisions to be used in an attack upon the USSR. This figure was already 45% greater than the total fuel consumed by the

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\(^{125}\) Dallin, p.307.

\(^{126}\) Noakes, et al., p.632.


\(^{128}\) Armaments planning for Barbarossa assumed that a German victory by October would allow for the exploitation of Russian raw materials deposits. Reinhardt, p.140.

\(^{129}\) Halder notes in his diary, on November 19, 1941, that General Thomas stated that a reserve of 100,000 tonnes of fuel needed to be accumulated by December. Note that the Wehrmacht in the east was using 88,000 tonnes whereas Germany and the occupied territories used only 12,000 tonnes. Halder, p.559.
entire German military from September 1939 to June 22, 1941. However, as the date for Barbarossa drew closer, the estimates of Wehrmacht fuel consumption grew steadily to 110,000 barrels a day, while the Luftwaffe claimed it needed a daily 50,000 barrels for itself. Most Nazi economic planners conceded that the German war economy could only supply the military at such levels for 60 days.

Nazi economic planners based their figures on the assumption that a single panzer required two gallons of fuel per mile, but this was the ‘ideal’ performance of a panzer driven at a constant speed upon the paved highways of Belgium. In actual fact, the total fuel consumption of the Wehrmacht during the first phase of Barbarossa (June-December 1941) was four and a half times greater than the combined fuel consumption of the armed forces during its conquest and occupation of Europe. Moreover, the Germans found that they were unable to use the captured stock of Soviet gasoline because it was of a low octane rating. Benzol could be added to Soviet gasoline, but finely tuned German engines ran poorly on this concoction. Moreover, this procedure was only possible if there was a specially constructed chemical facility close to the front. By September 29, 1941, the Wehrmacht was already suffering from a fuel shortage.

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130 Goralski, et. al., p.62.
131 Ibid.
132 Ibid., p.63.
133 Likewise, all Barbarossa planning was completed under an ideological veil which under-estimated Soviet capabilities and over-estimated the ease with which ‘superior’ Nazi forces would win. Reinhardt, p.130.
134 Ellis, p.48.
shortage of 24000 barrels a day. Panzers which had cruised on a pint of oil in order to
cover 60 miles of paved European roads, required 4 gallons of oil to cover the same
distance in the USSR during the *razaputisu* (the weeks during spring and fall when rain
reduced the ground to mud). The combination of mud, wear-and-tear as a
consequence of the Russian terrain, and the shortage of rubber in Germany quickly
reduced the mobility of the Wehrmacht’s mechanized divisions. Army Group Centre,
the Wehrmacht’s spear-head, lost over one third of its motorized vehicles within the
first month of Barbarossa and by March 1942, no more replacement tires were sent to
the Eastern front.

This situation explains the mystery behind Hitler’s directive of August 21, 1941,
to divert the main attack from Moscow. The fields of Baku and Maikop yielded an
annual output four times greater than the total oil supplies under Reich control by
1941. Yet there was also another reason why Hitler aimed south, and ironically it too
had to do with oil. Stubbornly resisting the German onslaught in September 1941, the
Crimea was a mere 400 miles from the main source of the Reich’s oil in Romania.

\[135\] Overy, *Why the Allies Won*, p.216.
\[136\] Goralski, et. al., p.77. Halder notes on August 2, 1941, that General Buhle mentioned that dust had
ruined the engines of the Wehrmacht’s motorized equipment. Hence, captured Russian material was
often being used. Halder, p.492.
\[137\] H. Trevor-Roper, *Hitler’s War Directives, 1939-1945: Texts from Walter Hubatsch, Hitler’s
p.207.
\[139\] Hitler emphasized the need to take Crimea in order to safeguard Romanian oil, during a conference
on August 22, 1941. Halder, p.514.
early as June 25, 1941, the Soviets conducted four strategic air-raids comprising of thirty bombers each, and struck the wells, refineries, storage and shipping facilities at Constantza.⁴⁰ On July 13, 1941, six Soviet bombers returned to destroy three refineries, the distillation plant, eleven full storage tanks, and twelve oil-laden rail-cars. Such raids continued on a regularly basis and on August 10, 1941, the main oil pipeline to Germany at the Danube River bridge near Cernavoda was destroyed. Indeed, the threat posed by Soviet strategic bombing was so great that during the period from June to September 1941, while the Crimea’s airstrips were still operational and in Soviet hands, the Luftwaffe was compelled to divert 5 000 planes from offensive or supply operations in order to protect Ploesti and Constantza.⁴¹ The effectiveness of the Soviet airforce during the Soviet evacuation of Odessa and Battle for Crimea in general, is attested to by von Manstein who writes that:

the air above was dominated by the Soviet air force... not only the front-line infantry and field batteries had to dig in: it was necessary to dig pits for every vehicle and horse behind the battle zone as protection against enemy aircraft. Things got so bad that anti-aircraft batteries no longer dared to fire in case they were immediately wiped out from the air.⁴²

Hitler disallowed counter-strikes at the Soviet oil facilities in Baku, Maikop, and Astrakhan, because he wanted them captured intact. The irony was that during the battles of Stalingrad and Kursk, the Soviets had the luxury of close-quarter oil supplies

⁴⁰ One hour after German fighters launched their attack on June 22, 1941, Soviet bombers raided German airfields and “no one knew where they had come from”. The same thing was reported to have occurred along the entire front. C. Bekker, The Luftwaffe War Diaries, (New York, 1973) p.316.
⁴¹ Goralski, et. al., pp.78-79.
from their refineries which the Germans generously left undamaged.\footnote{H. Rudel, \textit{Stuka Pilot} (New York, 1979) p.71.} When Maikop was eventually surrendered to Nazis, the retreating Soviets made sure that the oil wells had been thoroughly destroyed. The Germans did not bother to undertake the extensive and expensive repairs needed to make the facility operational.\footnote{Goralski, \textit{et. al.}, p.179. Some accounts note that repairs were attempted but never completed.}

Another factor which limited the output of the German war industry was the shortage of coal.\footnote{Between March and August 1941, coal production in the Ruhr dropped by 2 million tons per month (-15%). This was due to a shortage of mine-labour (50 000 vacancies throughout the Reich in September 1941). Herbert, p.143.} According to the minutes of the Central Planning Agency’s (Speer) meeting with Hitler in November 1942, “supplies of iron ore and ferroalloys have with great difficulty been assured, but unless the coal problem is solved there can be no increase, in steel output.”\footnote{Macksey, p.122.} In 1939, Germany had been the world’s third largest coal producer, its output equaling 234 million tons.\footnote{Rudel, \textit{Stuka Pilot} (New York, 1979) p.71.} However, the irony of the German occupation of Europe was that the majority of occupied European industries depended upon Germany for coal (Britain of course, no longer supplying after 1939). The harsher reality was that the German shortage was in a specific type of coal, that being the ‘hard coal’ which is used for coking. Deposits of this type of coal found in France and Belgium were left untouched, perhaps due to a shortage of mine labour.\footnote{Rudel, \textit{Stuka Pilot} (New York, 1979) p.71.} Similarly, the coal mines in occupied Ukraine which were repaired or had escaped Soviet
sabotage, were under-utilized. These mines only yielded 10% of their pre-war output with the result that the German armed forces in the Soviet Union was compelled to ship coal from Upper Silesia to satisfy their requirements. Yet even though there was a general coal shortage, the Nazi leadership did not bother to curtail non-essential coal (civilian) consumption.

147 Ibid.
149 Wright, p. 119. and Dallin, p.378.
The Mis-Use of Air Power:

Until 1938, the Luftwaffe High Command had no air-units which were specially committed for support in Wehrmacht operations and yet this was one of the main precepts of Blitzkrieg theory.\(^\text{150}\) Goering made the fatal error of devoting all available Luftwaffe resources for the construction of fighter planes (during the 1930s) rather than a balance between the latter and a strategic bomber force.\(^\text{151}\) A fighter pilot by training, Goering favoured the production of fast and sleek fighter-planes compared to bombers which he thought were too vulnerable to enemy fighters and anti-aircraft weapons.\(^\text{152}\) Hitler also favoured this decision because with limited resources one could build more fighters than bombers. Nazi planners did not want to use their limited raw materials to produce a few heavy long-range bombers at the expense of tanks.\(^\text{153}\) Nevertheless, the Luftwaffe's General Wever had advocated a four-engine “Ural bomber” to provide a strategic capability. The project was ultimately cancelled in Spring 1937 even though

\(^\text{151}\) Lucas, *Reich!* p.142. It is noteworthy that among the senior military staff, Goering was most adamantly against Hitler's plans to invade the Soviet Union. Goering realized that the Luftwaffe did not have the capability to successfully engage enemies on various fronts. Bekker, p.310.  
\(^\text{152}\) H. Probert, *The Rise and Fall of the German Air Force, 1933-1945*, (London, 1983) pp.161-168. After a few weeks into the Barbarossa campaign the Luftwaffe reported that many of their bombers were extremely vulnerable to infantry weapons (small-arms fire). It was estimated that 75 % of these aircraft (especially in anti-tank roles) were shot down by infantry weapons. Moreover, the engines were extremely sensitive to dust. R. Muller, *The German Air War in Russia*, (Baltimore, 1992) p.124. Soviet flak was very effective against low level attacks. (General Marquardt, chief engineer of bomb development at Luftwaffe Technical Office). On the first day of the Barbarossa campaign, many German bombers crashed not as a result of direct hits, but because explosions of Soviet flak near their wings caused the Luftwaffe planes to shatter. Bekker, pp.314-315. By November 1941, many Luftwaffe units had to be sent back to the Reich for refitting. Bekker, p.325.  
\(^\text{153}\) Bekker, p.320. Because of the lack of sufficient aircraft level productions, bombers were being used (1939-1944) as ground attack fighters to replace the latter which had been destroyed. Bekker, p.403.
work had progressed on it with great expense since 1933, and two models were ready for testing.\textsuperscript{154} The Ural bomber and other bombing platforms were not approved for production unless they could “dive” like \textit{Stukas} (Junkers Jumo 87), which became the “idol of the Luftwaffe General Staff” and the symbol of ‘Blitzkrieg’.\textsuperscript{155} The JU 88 for example, required 25 000 modifications before it was allowed into production.\textsuperscript{156} It is estimated that between 1941 and 1943, 10 000 aircraft engines were wasted in the test flights of only two bombers (He 177 and Me 210) ina futile attempt to create a ‘diving bomber’.\textsuperscript{157} ‘Blitzkrieg’ strategy had no use for long-range capabilities since only short (distance and time) battles were to be fought.

General Kesselring supervised the planning for Luftwaffe bombing operations against the Soviet Union but much of his theorizing was never put into practice:

Suitable targets in sufficient numbers existed, and in cooperation with the Minister of Armaments and Ammunition, a bombing program against Soviet industry and supply depts was worked out... but the time was passed; what would have been entirely practical in 1941 was no longer so (thereafter).\textsuperscript{158}

\textsuperscript{154} Suchenwirth, p.41.  
\textsuperscript{155} ibid., pp.37-38.  
\textsuperscript{156} Bekker, p.329. Another example was the He 117 whose design called for it to have four separate engines, but which was produced with two engines in tandem in order to drive its propellers in a futile effort to make this huge bomber perform a dive! It crashed 50 times in test runs and wasted much time, labour and materials until its cancellation in 1944. Suchenwirth, p38.  
\textsuperscript{157} Suchenwirth, p.40.  
\textsuperscript{158} Deichmann, p.168.
These missions were left on the drawing-board because by the second day of the Barbarossa campaign, the Luftwaffe was already being used to ferry supplies for the Wehrmacht. The lack of a separate transport and strategic wing of the Luftwaffe meant that its entire strength would be used as an extension of the Wehrmacht rather than as an air force with its own objectives.

If Army demands for air support were to be met, adequate air forces were not available for action against targets of a type the destruction of which might have served to balance Russian numerical superiority in favor of the German Army, as, for example large Soviet tank factories. Practically speaking, the Luftwaffe now had to restrict itself almost exclusively to only one mission, that of supporting the Army.

Hence, relatively few raids were made upon Soviet strategic targets such as the electricity generating stations at Moscow and Gorky which supplied power to all of western Russia. Luftwaffe planners had noted that "the most vulnerable aspect of Russian war industry is the supply of electric power." They concluded that the Moscow-Upper Volga region supplied the USSR with 50% of its electricity, and that its loss would result in an 80% decrease in tank engine production. Indeed, the destruction of eight plants which supplied a million kilowatts of electricity, was calculated to be enough to halt all industrial production in European Russia. Luftwaffe intelligence reported that "the aero-engine facilities at Kuibyshev alone were

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159 Bekker, p.318.
160 Suchenwirth, pp.34-35.
161 Deichmann, p.159.
162 Muller, p.171. and Suchenwirth, p.77.
bigger than Germany's six main assembly factories". Strikes at it and the factories in Ufa, Kazan and Moscow, would have permanently disabled the Soviet air force.\textsuperscript{165}

Nevertheless, the accomplishment of such tasks required the employment of all Luftwaffe bombers in the east, irrespective of the Wehrmacht's needs for air support, transportation or evacuation. This was the reason that these raids were seldom attempted and if so, then the bombing was not conducted 'in concentration'. In fact, "the commitment of bomber forces in action over the actual field of battle on the ground was authorized theoretically only in exceptional circumstances..."\textsuperscript{166} Luftwaffe commanders attest to the poor preparations of the Wehrmacht:

The German Army had nowhere near enough anti-tank weapons, for which reasons the Luftwaffe had to provide support in this field. Owing to faulty measures by the German Command and because in large number of Russian tank factories were located in areas beyond the range of German bombers, no measures were taken to destroy the factories and thereby reduce production.\textsuperscript{167}

When Hitler finally authorized a plan against strategic targets in Moscow and Gorky (Operation \textit{Eisenhammer}) in March 1945, the nearest distance from Nazi airfields to the

\textsuperscript{165} Moscow area: Rybinsk, Ulich, Shatura, Kashira, Stalinogorsk; Gorki area: Balachna, Gorki-Molotov, Dserhinsk; Yaroslavl area: Yagres, Yaroslavl Synthetic Rubber factory, Komosmolsk.
\textsuperscript{164} Muller, pp.171-172.
\textsuperscript{165} \textit{ibid.}, pp.41,115.
\textsuperscript{166} It is estimated that of the raids on Gorki for example, only a few Luftwaffe bombers took part. Deichmann, p.151.
\textsuperscript{167} Deichmann, p.47.
objectives was 1000 miles. No German plane was capable of carrying enough fuel to make such a journey (there and back) nor a sufficient bomb load to destroy the target. The bomber is a strategic weapon which if not used ‘in concentration’, has a dissipated effect. The Geschwader (bombers) were divided among various Air Corps and in turn subdivided among the three Army Groups. Geschwader employed individually may have achieved goals for the Wehrmacht (close range support operations), but had virtually no effect destroying Soviet strategic targets, industrial production or transportation. After a week of air operations the Luftwaffe might only have destroyed a single day’s output of Soviet tanks, and this too, at great cost to themselves. For example, on July 22, 1941, the Luftwaffe sporadically delivered 104 tons of high explosives and 46 000 incendiary bombs over Moscow but failed to destroy the Kremlin which was the main target. The following nights, Moscow was again raided by 115 bombers. Thereafter, the raids on Moscow had a continuously declining number of participating bombers (50, 13, 15 per mission). It is estimated that 59 out of the 76 bombing raids on Moscow in 1941, were carried out by a bomber force of between three to ten planes. As another example, the ‘strategic raid’ ordered by

168 Lucas, Reich! p.146.
169 The July 22, 1941 attack on Moscow represented a Luftwaffe force of 127 aircraft which had been assembled from various air groups. Bekker, p.321.
170 Bekker, p.320.
171 Ibid., pp.320-322. Erskine Caldwell reports that “hundreds” of regular parachutists with light tanks and “diversionists” (dressed as Russians), were dropped behind Soviet lines during the Battle for
Kesselring against the aircraft factories at Voronezh was conducted by a single long-range reconnaissance plane from *Luftflotte 2* in the autumn of 1941.\(^{172}\) The lack of ‘bombing in concentration’ also allowed Soviet railways to continue their transport function relatively unscathed.\(^{173}\) Of the 5939 attacks on Soviet railways between June to December 1941, the average disruption time “was only five hours and forty-eight minutes”.\(^{174}\)

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\(^{172}\) Bekker, p.325.

\(^{173}\) “... we have to keep on attacking the bridges. Their destruction delays the enemy, but not for too long.” H. Rudel, *Stuka Pilot* (New York, 1979) p.29, also pp.72-73.
Ideology Interfering with Economics:

The concept of “qualitative superiority”, the production of weapons thought to possess an overwhelming technological or qualitative advantage, was another aspect of Nazi ideology which was a thorn in the side of the German war economy.\textsuperscript{175} The German war economy was burdened because military commanders on the Eastern front often demanded the creation of weapons with specific merits, to deal with a specific situation. That is to say that there was the mistaken belief that ‘super weapons’ could solve the Wehrmacht’s military problems and win battles.\textsuperscript{176} It may also be argued that the exoneration of ‘qualitative superiority’ provided an outlet of escape for military commanders who sought to justify their inabilities or to avoid the blame for failure. One illustration of ‘qualitative superiority’ is the \textit{Sturmpanzer Tiger}, a self-propelled assault gun which was supposed to possess the capability of destroying a building (collapsing a structure) with a single shot. The Wehrmacht demanded such a weapon after its siege and close-quarter fighting experiences in the Crimea and Stalingrad.\textsuperscript{177} Therefore, to eliminate their need to fight protracted sieges against an fortified enemy, the Wehrmacht

\textsuperscript{174} Bekker, p.325.
\textsuperscript{175} Milward, \textit{The German Economy At War,} p.101. Also thought of as a way to overcome quantitative inferiority vis the Allies.
\textsuperscript{176} Such as \textit{Sturmpanzer IV “Brummbär”} (Grizzly Bear), only 300 were produced, and rushed to take part in the Kursk offensive. Most were destroyed because their poor handling quality made them vulnerable to Soviet tanks and anti-tank weapons. G. Forty, \textit{World War Two Tanks,} (London, 1995), p.93.
\textsuperscript{177} “The heaviest caliber bombs (5 000 lbs) on permanent fortifications were not enough to completely neutralize the installations, even in the case of direct hits.” A complete development of weaponry and ammunition was undertaken shortly after June 1941. Deichmann, p.49.
asked for a weapon which could immediately reduce any fortification to rubble. The result was the *Sturm Tiger* (as it was nick-named) which was equipped with a breech-loaded mortar that fired a 760 pound projectile. However, the time and effort needed to load and re-load this weapon made it impractical for employment during the fast paced battles in the USSR, and therefore, only 18 *Sturm Tiger* vehicles were built.

The *Elefant* tank is another example of the labour and resource wastage of the German war economy due to the concept of ‘qualitative superiority’. *Elefant* was manufactured by Porsche however, instead of the sleek and agile automobiles it is known for, Porsche produced the worst tank design in history. *Elefant* was the result of Hitler’s insistence that the largest possible weapon, an 88 mm calibre gun be attached to an impenetrable armoured vehicle. Only 90 *Elefant* tanks were built because of the enormous cost to produce each unit. They were completely ineffective on the battlefield “and many were eventually destroyed by their own crews.” Another similar failure by Porsche was *Maus*, an inappropriately named tank which possessed the weight of 1000 tons. Its designers were unable to develop an engine powerful enough to propel this monster faster than 8 miles per hour. It is no wonder that only two *Maus* tanks were

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179 Collins-Jane’s *Tanks of World War II*, (Glasgow, 1995) pp.82-83, and Forty, p.102.

180 Collins-Jane’s *Tanks of World War II*, pp.84-85.

The discussion of ‘qualitative superiority’ would not be complete without mention of Dora. Von Manstein writes that Dora was originally built to bombard the Maginot Line:

The barrel must have been 90 feet long and the carriage as high as a two story house. Sixty trains had been required to bring it into position along a railway especially laid for the purpose. Two anti-aircraft regiments had to be constantly in attendance (to protect it). Dora was a gigantic 31.5 inch railway gun which required a total component of 44,000 men for its transport and operation. It is noteworthy (like Maus and another huge siege gun called Thor) that there was no bridge over which Dora could traverse, and that it had to be shipped in pieces to its location and then reassembled. In marshy and muddy theatres of operation, Dora’s recoil created a crater into which Dora became submerged.

“Qualitatively superior” weaponry was more expensive, and consumed much more production time and resources than regular issue equipment. Its production caused an unbearable deficiency of arms and equipment for the Landser (front-line German soldiers). A second detriment of “qualitative superiority” was that it caused a shortage of spare parts because resources were constantly being diverted to produce

\[^{182}^\text{Collins-Jane’s Tanks of World War II, pp.90-91, and Forty, p.107.}\]
\[^{183}^\text{von Manstein, p.245.}\]
\[^{184}^\text{Nolden, in Steinhoff et. al., p.144.}\]
\[^{185}^\text{Weinberg, p.537, and I. Hogg, German Artillery of World War Two. (London, 1987), pp.109,119,120.}\]
new types of weaponry instead of for the maintenance of existing models. This explains why many German officers have written that the roads from Berlin to Moscow were littered with discarded weapons which were missing parts.\textsuperscript{187} Scarcity meant choosing to produce one item, out of a multitude which were absolutely essential to the Nazi war effort. An apt illustration of this dilemma concerns the supply of tungsten-carbide used to manufacture the tips of high speed machine tools. These tips enabled industrial machine tools to mold steel, without which the manufacturing of weaponry was impossible. However, the valuable commodity of tungsten-carbide was instead requisitioned to the manufacturer who produced the carbide-core of anti-tank ammunition. The aforementioned ammunition was the only type of its kind in production which was “only just capable” of piercing the armour of Russian heavy tanks.\textsuperscript{188} The concept of ‘qualitative superiority’ was also incompatible with an army which mainly depended on the horse for its transportation. Oversized and overweight weaponry required eight strong draft horses for its transport. Yet, this was not the only problem which the horse encountered. German manufacturers insisted upon building horse drawn carts made of steel. Hence, the Wehrmacht requisitioned hundreds of wooden carts from Poland to avoid transporting hay upon steel carts!\textsuperscript{189} Similar

\textsuperscript{186} Halder noted on August 3, 1941, that the troops “feel very uncomfortable about the artillery fire, which they cannot return because of ammunition shortages”. Halder, p.494.
\textsuperscript{188} Guderian, p.277.
\textsuperscript{189} J. Erickson, \textit{The Road to Stalingrad}, (London, 1993) p.324.
problems were faced in the winter when German horses were forced to pull iron sleds.¹⁹⁰

Artillery is a prime example of the mis-allocation of resources and limitation of war materials which hindered Nazi military operations. The Wehrmacht, being Hitler’s favourite service and the main arm of any invasion force, was nonetheless poorly equipped. Its main striking battle-piece the 88mm Flak Pak was inferior to every other operational artillery piece in the world.¹⁹¹ This gun was actually a simple variant of a German weapon used during the First World War. Its shortcomings were most noticeable on the Eastern Front where the Landser were shocked to find that their shells were not strong enough to damage Soviet medium and heavy tanks.¹⁹² Yet Hitler was determined to keep producing the 88mm Flak Pak because ‘Blitzkrieg’ strategy necessitated the production of a cheap weapon in large quantity, irrespective of military considerations.¹⁹³

¹⁹⁰ Ibid.
¹⁹¹ Lucas, Reich! p.147. “It was skillfully publicized and magnified into an all-conquering super weapon — which it certainly was not.” Hogg, pp.162-170.
Non-Standardization of Weaponry:

By far the worst sector of the German economy was the Air Ministry.¹⁹⁴ Production levels decreased by 20% (1939-1943) because aircraft designs were constantly being altered, thus preventing industry from serializing production.¹⁹⁵ Furthermore, the Air Ministry was stacked with junior air-aces who believed it was their patriotic duty to introduce constant “improvements” in design.¹⁹⁶ This can be illustrated by the multiple orders that were issued from the Air Ministry to industries throughout the Reich in 1940. Soon after the production of the JU-88 began, the Air Ministry ordered the factories to instead manufacture Henschel 129s. Half way into calibrating the machine tools for Henschel 129 production the Air Ministry canceled its plans in favour of the JU-188. The manufacture of JU-188s was ready to begin when the Air Ministry decided that the ME-410 was a better choice. After 80% of the tooling was completed for the latest project, the Air Ministry commanded industry to produce JU-388s. When the manufacturing was already in progress, the Air Ministry informed industry that the bomber program had been scraped and that certain factories were to produce wings for the JU-88.¹⁹⁷ Likewise, the other branches of the Nazi armed forces never consulted with industry about the availability of raw materials, before weaponry designs were finalized for production. This resulted in manufacturing problems and

¹⁹⁴ A very good source for this is Bekker, The Luftwaffe War Diaries, in particular see appendix 10 and 12 (production of main German types of aircraft, 1939-1945) pp.511,555.
¹⁹⁵ Bekker, pp.555,556.
¹⁹⁶ Klein, p.160.
¹⁹⁷ Ibid.
consequently, a decline in output due to the expensive and constant re-adjustments of machine-tools. In most cases, weapon upgrades were "minuscule improvements of faulty designs". 198

The problem of low production was compounded by the fact that so many variants of a single piece of weaponry were commissioned. From 1935 to 1945, there were 230 different types of armoured vehicles, 94 types of tanks, and 42 types of armoured personnel carriers in German services. 199 Much of this problem was created by the overlap in authority of parallel bureaucracy. For example, both the Army's Ordnance Department and the Ministry of Armaments and Munitions possessed a committee dealing with the development of new weaponry. 200 However, it was the latter's responsibility to deal with producers while the former was relegated the task of testing the equipment. 201 This caused insurmountable problems for the Wehrmacht who trained soldiers on certain types of machinery only to find that the Landser were equipped with different weapons in the field. German divisions were also raised in "waves" (wellen), each with a different level of armament and equipment depending on what was available at the time. 202 This scenario either produced the problem of too

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198 DiNardo, Germany's Panzer Arms. p.12.
199 Ibid. and R. Cross, Citadel, the Battle of Kursk, (London, 1993) pp.48-54., also see Guderian and Ellis.
200 Memorandum of Colonel Helder (Wi-Ra-Amt OKW) March 1942, problems are caused by the "unplanned allocation of war contracts among the available plants" Noakes et. al., p.643.
201 DiNardo, Germany's Panzer Arm. p.12.
202 Steinhoff, in Steinhoff et. al., p.124.
many machines which no one knew how to operate (or operate well), or that there was not enough of a single type of weaponry for Landser use.\textsuperscript{203} Nazi planners also overlooked the fact that the majority of German soldiers could not read the foreign language which inscribed the operating panels of captured vehicles put into German service. This problem was rarely rectified before foreign equipment entered Wehrmacht service because the German supply system lacked centralization. Captured equipment was not surrendered to a single supply depot, but distributed piecemeal.\textsuperscript{204} Moreover, storage facilities indiscriminately inventoried their equipment, disregarding the origin or capability of each piece. Thus, when a front line commander requested motorized support, the majority of what he received might be foreign built.\textsuperscript{205}

Horrendous problems were also encountered, trying to service and maintain over 400 types of machines for which replacement parts were not interchangeable.\textsuperscript{206} This smorgasbord of Wehrmacht weaponry required Army Group Centre (in the USSR) to haul over a million spare parts for the 96 different variants of personnel carriers, 111 types of trucks, and 37 different models of motorcycles in its contingent.\textsuperscript{207} In many cases this particular Army group was shipped spare parts for weapons it did not

\textsuperscript{204} DiNardo, \textit{Germany's Panzer Arm}, p.13.
\textsuperscript{206} Milward, \textit{War, Economy and Society}, p.154.
possess. Furthermore, Reich factories were prohibited to produce more than a fixed quota of spare parts because the Nazis preferred the production of whole units.

Indeed, this industrial practice fostered greater economic corruption in an attempt to overcome difficulties:

The policy of furnishing as many complete tanks and motor vehicles as possible to the front was detrimental to spare parts production. It was by no means unusual that some armoured regiments sent their technical personnel on unauthorized trips to factories in Germany to obtain spare parts through personal contact.

Weapons such as the Tiger tank for example, were so complex to repair that each tank required "a small army of mechanics to keep it in the field." It did not help that there was only one extra engine and transmission built for every ten Tiger tanks, but even if a replacement could be found, the installation of these components required several days.

Another point directly related to the Wehrmacht's logistic defeat was that when Hitler began the war in 1939, the German automobile industry had not been geared for war production. For example, in 1939, 65% of Daimler-Benz' production still consisted


\[211\] *ibid.*, p.218.

\[212\] *ibid*.
of city-lorries. Therefore, the Wehrmacht employed trucks built to civilian standards which proved completely unsuitable for military service on the Eastern front.

Combined with the inability of the German economy to cope with the production of so many types of vehicles and their spare parts, the Wehrmacht was forced to demotorize many of its divisions between 1939-41. Furthermore, tanks and other weapons were contracted to private companies which had no past experience and lacked conveyor-belt production methods. Companies like Opel who had helped pioneer the latter technique were not consulted because the Nazis had considered them to be Bourgeois-Jewish firms. Promoting the idea that the German soldier was equipped with the best, German tanks were individually constructed by artisans until 1944. The German war economy:

still employed techniques and organization more attuned to the nineteenth century... manufacture by a large number of small-scale ... scattered throughout the countryside ... workshops employing no more than thirty men...

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216 Colonel Helder (Wi-Ru-Amt OKW) March 1942, states that contracts were given to manufacturing plants “the methods of productions (for the weaponry) they are not accustomed with”. Noakes et. al., p.643.
217 DiNardo, Germany's Panzer Arm. p.11.
218 Lucas, Reich! p.167.
219 R. DiNardo, Mechanized Juggernaut or Military Anachronism?: Horses and the German Army of World War II. (Westport, 1991) p.119.
Empire, An Economic Curse:

By 1941, occupied Europe had provided the Reich with 100 billion Reichsmarks, equivalent to 85% of Germany's pre-war national income.\textsuperscript{220} France and Belgium yielded the most, each surrendering one fifth of their total pre-war output to the Reich by 1942.\textsuperscript{221} In fact, from 1940-1944, France's contribution alone could have supported an occupying force of 18 million soldiers.\textsuperscript{222} Nevertheless, although the wealth of the Nazi's occupied territories seemed enormous on paper, it did not translate into actual gains for the Nazi war effort. The Nazis soon learned that the occupation of foreign territory does not in itself yield that nation's wealth to the occupier. Land has to be governed irrespective of its ruler and there are great costs involved when administrating territory. The stationing of a vast occupying army, and its housing, greatly surpass the cost of local policing.\textsuperscript{223} By June 22, 1941, one million troops were stationed as a Nazi occupation force throughout Europe. Besides this military commitment there was a further drain on the Reich's manpower because hundreds of skilled German technicians and administrators were dispatched to the occupied territories to ensure that requisitioned materials and industrial output remained on

\textsuperscript{220} Kitchen, p.87.
\textsuperscript{221} ibid., p.44..
\textsuperscript{222} Wright, p.119.
\textsuperscript{223} Direct contributions from the Reich to occupied territories for the cost of German administration, and other government functions, payments to correct price differentials on imported goods, and the payment of the bureaucratic and military fees, negated any potential economic yield from occupied Soviet territory. For example, non-agricultural deliveries of Soviet raw materials totaled 725 million Reichsmarks, however the Reich had to pay for 535 million Reichsmark worth of coal and equipment, not including additional supplies to the Wehrmacht. Dallin, pp.401,406.
schedule. These people are listed in Nazi records as "supervisory personnel". Consequently, the occupation of Europe was economically ruinous for the Nazis because more money was injected into their empire than could be extracted.

From 1940 to 1942, total government expenditure in occupied territories equaled 45 billion Reichsmarks. This is equal to one fifth of total war expenditure and 45% of what is termed as 'Other War Expenditures' which totals 54 billion Reichsmarks. These government expenditures measure practically all of the estimated net economic contributions of the other countries.

Neither did the German war economy benefit from the exploitation of foreign labour. The idea of employing the vast reserves of captured Soviet labour was ignored by most of the Nazi leadership due to the ideological constraint of employing Slav-Asiatic -subhumans in the Reich of the Übermenschen. Three and a half million Soviet POWs died (starvation and maltreatment) in Nazi captivity between June to December 1941. Racial discrimination was relatively less practiced on occupied Soviet territory (than Western Europe) because the formula "a Jew is a Bolshevik is a partisan" was conceived prior to Operation Barbarossa. In fact the two largest extermination camps, Auschwitz-Birkenau and Majdanek, were originally built by and for Soviet

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224 Guderian, pp.150-151.
225 It is estimated that from the entire occupied eastern territories, the Nazi extracted only 1/7th of the amount which they received from France. In a chart entitled "Ostland Budget for 1943", Dallin illustrates that there was a zero sum when comparing "receipts" to "expenditures". Dallin, pp.407-408.
226 Carrol, p.16.
POWs. Speer believed that labour was best utilized in its country of origin, under native supervision. However, Hitler later supported the ideological stance of the Minister of Labour Fritz Sauckel and the head of the Reich Commissariat for the Strengthening of Germany (RKFVD) Heinrich Himmler, that non-German labourers should be transferred to the Reich and used as slave labour. Actually, there was never any Nazi pre-war planning which suggested that workers from the occupied eastern territories would be transported and used as labour within the Reich. Nevertheless, this situation gradually arose due to the crisis in labour shortage which manifested itself even before the war began. Typically, the number of economic organizations involved in the regulation and use of Ostbeiter rose steadily as acute

229 ibid., p.274.
230 Wright, p.63.
labour shortages were felt throughout the Reich. However, only in mid-1943 were 1.5 million Ostarbeiter added to the Reich economy.

Hitler, only considered the paper worth of numbers. He envisaged his empire of a potential 250 million Europeans as an asset which was merely to be exploited by Germany. People however, are different from rocks and riches which simply have to be extracted and harvested. Labour conscription was only made mandatory in Poland, the Soviet Union and Greece, the nations which ironically also most resisted Nazi occupation. It is estimated that 80% of the first transports of Ukrainian labour to the Reich consisted of volunteers. However, by the summer of 1942 no more volunteers could be found because of the graphic images of how these Ukrainians were shipped to Germany in cattle cars and some uncensored letters which were sent back to relatives in Ukraine concerning the horrible plight of Ostarbeiter im Reich. On April 25, 1942,

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232 Dallin, pp.428,430. The following were the main economic agencies involved in the occupied USSR: Goering's Four Year Plan Office, The Office for Armament Economy of the Wehrmacht (Wirtschafts- und Rüstungs-Amt... Wi Rü Amt) under General Georg Thomas, the Economic Executive Staff East (Wirtschaftsführungsstab Ost — WiF Stab Ost), Rosenberg Ministry for the Occupied East (Ostministerium), and Paul Körner’s separate agency under Goering’s supervision called Economic Staff East (Wirtschaftsstab Ost — WiStab Ost). In addition to this there were individual Economic Inspectorates (Wirtschafts-Inspektion...WiIn) for the rear areas of each army group, and Army Economic Chiefs (Armee-Wirtschaftsführer — AWiFu) within the jurisdiction of each Army Group. There were also economic agencies assigned to every occupied Soviet oblast, called Economic Commands (Wirtschafts Kommando — WiKdo). Alexander Dallin has provided a “simplified” illustration of Nazi economic control in his book, which the reader will note, is most complex. Dallin, pp.314-315. The illustration is on page 318.

233 Wright, p.121. Between 1942 and 1943, 3.5 million of the total 4.6 million new labourers within German industry and agriculture, were foreigners. Three million (of the 3.5 million) were supplied from the occupied eastern territories. Dallin, p.431.

234 Fried, pp.32.

Goebbels wrote in his diary that the "attitude (of volunteering in Ukraine for Reich labour service) has changed completely in the course of months."236

The Nazis hoped that Western European workers would willingly aid Germany after hearing ideological and racial appeals.237 Failing all else, Sauckel hoped to coax Western Europeans with the promise of high wages.238 When they still refused, Sauckel deliberately created unemployment by closing native factories in occupied territories, or he withheld the ration cards of those who refused Reich labour service.239 Consequently, most foreign labourers who arrived in the Reich were non-volunteers who had seen their nations and families ravaged by the Nazi war machine. This resentment transformed itself into industrial sabotage, passive resistance, low productivity, and unruliness.240 Besides this, foreign labour was usually unskilled and this was no use to a war industry which crafted complex machinery.241 Due to a lack of interpreters there was also no easy way to train foreign labourers beside hand signs. Therefore, misunderstandings were an every day occurrence on and off the job site.242 Furthermore, there was a constant deflation in the ranks of foreign labourers due to the conditions in which they toiled, thousands dying from poor sanitary conditions,
exhaustion, or starvation. Speer noted that even after acquiring more foreign labourers from the grasp of Himmler’s SS, it did not raise industrial productivity in any significant way. Another factor for this was because over half of the 1.6 million additional persons who were added to the Nazi war economy by 1943, were sent to work as farm labourers because native Germans (farmers) were being conscripted into military service.

241 Speer notes that the ‘most skilled’ workers, Jews, were exterminated. Speer, Infiltration, p.6.
243 Speer Infiltration, pp.43,45.
244 Ibid., pp.15,38,78.
245 Klein, p.142.
Conclusion:

The natural limitations, as well as those imposed upon the German economy, clearly limited military possibilities. The lack of coordination between economic planners and military personnel was a byproduct of the anarchic state of Nazi politics. The non-standardization of production sapped the potential strength of the German economy. One result of this was that the Wehrmacht was not equipped as is commonly thought, with a few examples of the best machinery, but with a multitude of weapons varying in their operational capability. The most illustrative example of this was the aviation industry. Supposedly the vanguard of the ‘Blitzkrieg’ attack, the Luftwaffe was totally incapable of conducting its role as a tactical strike air-artillery. Moreover, any long range strategical role (bombing) was impractical given the models and quantity of aircraft being produced. The Wehrmacht’s dependence on air-supply to correct ground-logistics difficulties, soon reduced the Luftwaffe to a transport role. Rather than an asset, the military occupation of Europe further drained the German economy. Any potential gains by way of the seizure of the victim-nation’s economic assets, were squandered by the Nazi practice of economic decentralization or the individual appropriations of Nazi leaders for personal gains. The basis that the capture of European Soviet territory would cure the German resource deficiency, also proved false. The last reserves of the Reich’s coal and oil were squandered after the first months of Operation Barbarossa with no appreciable advantage to the German economy.
The Logistics of Defeat

Introduction:

The two previous sections of this work discussed the impotence of the German war economy and the ineptitude with which it was run. The final economic detriment which doomed the German war effort was its poor logistics capability. The inability to transport finished goods deprived the Wehrmacht of the supplies necessary to conduct operations. Furthermore, the journey from sender to receiver was so long that shipped goods often did not reach the front when the need for them was crucial. The central problem of German logistics was the railroad because it was the method of transportation most relied upon by military and economic planners. However, the railway soon proved incapable of handling the increased traffic, and no measures were undertaken to improve and extend its functionality. The motor vehicle industry in general, also remained undeveloped in the prewar era. This lead the Wehrmacht to become increasingly dependent upon the employment of horses for transportation and to haul supplies. Subsequently, the mobile strategy for swiftly winning the Soviet campaign remained unrealized. As the conflict prolonged, the Wehrmacht found itself logistically isolated and under-supplied. It was left without an adequate means to transport itself in the theatre of operations.
Going Nowhere, The Reichsbahn:

Hitler forbade any amendments or changes to Nazi military or economic plans regarding opponents whose geography could alter Blitzkrieg’s effectiveness such as the USSR. The Führer disregarded General Koestring’s report of September 3, 1940, that a “review of terrain features and conditions restricting movement in various parts of Russia; stress restriction on motorized movements.” Reflecting on the poor state of the Reichsbahn (German railway system) it was noted during a joint OKW-OKH conference on January 28, 1941, that the Wehrmacht would have to “depend on motor transport” because it could not depend on the transport ability of the German railroad. Hence, the OKH concluded that the Red Army would have to be defeated within the first 500 kilometers of the Wehrmacht’s advance due to the poor state of German logistics. The German railway system was not prepared to handle the increase in traffic and transport responsibilities as a result of the Nazi war effort. Since there was no spokesperson for Reich railway transport with direct access to

247 Halder, p.255.
250 Schnurre (General Gouvernament), in a letter to OKW and Minister of Transportation dated April 21, 1941, indicates that the Deputy Commissar for External Trade of the USSR (Krutikov) complained that although Soviet shipments according to the Economic Agreement were on schedule, that there was a backlog at the Soviet-German border (Poland). This was caused by a lack of German rolling stock for the transfer of goods and the horrendous state of German logistics which Schnurre strongly recommended be improved. and Documents on German Foreign Policy 1918-1945: Series D (1937-1945), Volume 12. (Washington, 1954) p.602.
Hitler, the problem of Nazi logistics grew chaotic.\textsuperscript{251} In the first campaign (Poland) of the war the Wehrmacht lost 50% of its motorized vehicles and the destruction of the railways by both belligerents was so detrimental to supply that “the German logistic system was saved from collapse only by the speedy Polish surrender”.\textsuperscript{252} The seizure of motorized transports from Western Europe aimed to correct the Wehrmacht’s logistic deficiencies.\textsuperscript{253} “The army that was to shake the West was a scavenger. Its hopes for victory rested in part on the capture and utilization of French, Dutch and Belgian vehicles.”\textsuperscript{254}

Although OKW continuously urged the expansion and improvement of railway systems in German control, nothing was done.\textsuperscript{255} Similarly, the complaints and recommendations of senior Transport Ministry officials fell upon deaf ears. General Gerke reported on November 18, 1940:

railroad situation still tight. Backlog of 540 trains in the east and in Berlin... In the east, output of coal is still lagging... Lorraine coal mines damaged during the war still not back in production.\textsuperscript{256}

\textsuperscript{251} Lucus, Reich! p.147.
\textsuperscript{252} van Crevel, Supplying War p.146. and see A. Clark, Barbarossa: The Russian-German Conflict 1941-45, (London, 1966) p.88.
\textsuperscript{254} van Crevel, Supplying War, p.146.
\textsuperscript{255} Quarter Master General Supply and Administration OKH, General Wagner urged the immediate “creation of a Military Administration Section and Army Supply Section.” (August 26, 1940) Halder, p.251.
\textsuperscript{256} Halder, p.286.
Consequently railway traffic was brought to a halt in Spring 1941 when the Wehrmacht's Balkan campaign coincided with Hitler's planning for Barbarossa.\textsuperscript{257} The inability to transport coal and other raw materials to the Reich’s war producing factories caused a drop in German industrial production, while finished war products took too long to reach the soldiers in the front lines or were lost along the way.\textsuperscript{258} In December 1941, during the battle for Moscow, only 30\% of vital German consignments reached their front line destinations.\textsuperscript{259}

The problem of supply was heightened because trains could not always take the shortest route to their destination. This was due to the fact that individual Nazi leaders ruled their sections of the Reich economy and its territory like feudal lords. Trains hauling materials for influential Nazis were assigned special rail priority. Goering, Himmler, and Hans Frank (Military Governor of Poland) were among those who were influential enough to actually commandeer entire railway lines for their exclusive use.\textsuperscript{260} The rivalry between these men was so intense and the transport situation in such dire straits, that the train(s) of one influential patron were often hijacked and forced to unload its stock.\textsuperscript{261} These trains were then re-routed and reloaded with the cargo of another Nazi patron. This uncontrolled banditry prompted the Luftwaffe to post armed

\textsuperscript{258} It was estimated by Paul Pleiger (Head of Reich Coal Association, \textit{RUK}) that in 1941, there was a loss of 60 million tons of coal due to poor transport capability. Mierzejewski, p.35.
\textsuperscript{259} Ibid. and Rauss, et al \textit{Fighting in Hell}, p.163.
\textsuperscript{260} Barkai, p.157.
guards atop their trains. Frank successfully disallowed military supply trains to pass directly through Poland en route to the Russian front. It was not until December 1941-January 1942, after Hitler intervened on behalf of the Wehrmacht, that Frank accepted “in principle” that track priority should be given to military supply trains.263

The dire situation of the railways was further complicated by the existence of parallel bureaucracy. Civilian and military transportation (the trains and the tracks) was managed by General Gerke who was the head of the Transportwesens division of OKH (Oberkommando des Heeres). However, the transport of supply (the goods) was controlled by General Wagner who was the Quartermaster-General at OKH. Hence, the Wehrmacht’s logistics capability was sub-divided between two controllers, “one of whom controlled both ends of the pipeline while the other governed its central section”.264 Traffic jams ensued on the railways due to the lack of communication and coordination:

Everything seemed very badly organized, with convoy’s moving out, only to be shuttled onto other sections of the track... People were always moving out of the way to let a train go by, only to see it a few minutes later headed in the opposite direction. What a mess!265

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262 van Creveld, Supplying War, p.161.
263 ibid., p.178.
264 ibid., p.145.
Furthermore, Gerke had no authority to ship or schedule supplies belonging to the navy or the air force; each of which had their own separate transport bureaucracies.\footnote{Ibid.}
'Blitzkrieg' Is Immobilized:

Pre-war planning for the Wehrmacht's supply requirements during the Barbarossa campaign were estimated to be 120 train loads of supplies per day, without taking into consideration extra requirements of ammunition, equipment or hospital trains. However, the Wehrmacht was never supplied with more than 100 trains a day, and this occurred for little more than a week. Army Group Centre, which was supposed to receive supplies from thirty-one trains a day had to cope with the supplies from a daily sixteen trains. The famed panzer general, Heinz Guderian, had to limit his movement to four miles per day by October 28, 1941. There was not enough fuel to allow for both, his panzers to attack, and the rest of Army Group Centre to maintain a minimum operational distance with Guderian. General von Kleist (1st Panzer Army) stated that his army halted for weeks during its campaign to reach Baku in the summer of 1942 because of fuel shortages and that “in some cases petrol had to be brought forward by camel train”. The transport crisis also detracted from Luftwaffe’s ability to fulfill its ‘Blitzkrieg’ role as a long-range artillery force because its bombers were increasingly being used to supply the Wehrmacht. From June to September 1941, the

268 Ellis, p.82. Army Group Centre, which between June 22 to July 10, 1941, had covered 500 km (25-30 km/day), were reduced to a speed of 4 or 5 km per day for the next sixty days. Fugate et. al., p.341. Because of lack of spare parts and a shortage of fuel, Guderian was left with 50 of his original 600 tanks by November 14, 1941. Perret p.176.
269 Perret, p.188.
270 Weinberg, p.298. The inability of the Luftwaffe to supply the troops is illustrated by the following example. On December 25, 1942, in the Stalingrad kessel, “each of us got a tablespoon of peas, two tablespoons of soup made of dry potatoes, and two squares of chocolate.” Pfenning, in Steinhoff et. al., p.154.
Luftwaffe flew 30,000 sorties to supply 40,000 tons of fuel and other supplies to the beleaguered Landser. Even so, this total tonnage was only sufficient to satisfy the army’s needs for a mere sixteen hours. Needless to say this was also a very costly method of transport. Of the total German fuel consumption in 1941, more than half was used by the Luftwaffe.

Furthermore, the Wehrmacht was 2,700 trucks short of their desired requirement prior to the Soviet campaign and to make up for this deficiency 750,000 horses employed were within a framework of 134 divisions. The 21 panzer divisions which invaded the Soviet Union in June 1941 “betrayed the German Army’s lack of modernity”. Throughout the Nazi-Soviet war, 80% of the Wehrmacht was composed of infantry divisions which relied on horse drawn supply columns and for transportation.

During the course of the war, the Wehrmacht suffered greatly from a lack of enough motorized infantry to close swiftly the gaps between fast-racing tank columns and the slower foot-bound units. The German army in the east had only a few battalions that could properly be called motorized infantry; many units were given this designation, but most of them were “in fact nothing more than infantry units that did not carry their own packs.” Indeed, the German force which invaded the Soviet Union was actually two armies: a motorized spearhead which led the invasion group, followed by the infantry and horse transported supply columns. Constant road congestion occurred whenever the forward

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271 Overy, Goering, p.229.
272 Carrel, Hitler Moves East, p.83.
274 DiNardo, p.37.
units tried to shuttle their trucks with supplies (or to get supplies) through the ranks of the horse drawn transports and marching men. Many times the roads remained blocked for both supply and troop movements until OKW was notified to referee the situation. One soldier recalls the state of the Wehrmacht’s logistics capabilities during the first day of Operation Barbarossa:

We followed behind the panzer and panzer grenadier divisions, because we could not keep up with the tanks and motorized infantry. Because of the length of the Russia front, horse-drawn artillery was part of the attack group in Russia instead of being reserves as we had been in France. We did not have enough mechanized artillery to man a 2,500-kilometre front, so horse-drawn artillery had to be used; however, the units that advanced quickly were mechanized. This was Blitzkrieg, but not has it had been in Poland and France, where the whole front advanced quickly. In Russia, the mechanized forces were like arrows that went out ahead of the rest of us.

The Wehrmacht could only field the equivalent of one tank per 291 square kilometres and one plane per 245 square kilometers on the Soviet front. Furthermore, German losses were quite heavy even in the preliminary months of the Barbarossa campaign. A former Landser noted that “we hadn’t been deployed as regiments or companies for quiet a while; we were now battle groups: a couple of

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275 Fugate et. al., pp.340-341.
277 van Creveld, *Supplying War*, p.147.
279 Ellis, p.46. Since Hitler did not have enough divisions to attack the Soviet Union, he ‘created’ more by reducing the number of tank regiments in each panzer division from two to one. Perret, p.162. and Kroener in Wegner, p.139.
tanks, a few riflemen ..." Von Manstein recalled that on July 10, 1941, 56th Panzer Corps (attached to Fourth Panzer Group, a spearhead formation) was using 205 captured Russian tanks and 600 Russian trucks. In fact, commanders did not hesitate to use captured Soviet T34 tanks because they were more rugged and easier to repair.

By July 26, 1941, von Manstein reported that 3 mobile divisions had been lost and only between 80 to 150 tanks were serviceable. General Gerd von Rundstedt reported on July 20, 1941, that he had lost half of his motor transport. Indeed, as the Wehrmacht advanced toward Moscow and Stalingrad, it became less motorized and more dependent upon horses.

By the middle of November 1941, the Wehrmacht possessed only 15% of the 500 000 vehicles (tracked and wheeled) with which it began the Barbarossa campaign, 6 000 of which were supply trucks.

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280 Rupp, in Steinhoff et. al., p.127.
283 von Manstein, pp.192-193,197-198. Generalmajor Walter Buhle (Head of Organization Branch of OKW) reported in mid-July that 50% of panzers in the Barbarossa campaign had been lost. Hitler’s response was to release 85 tanks reserved for the hypothetical ‘Middle East’ campaign. Reinhardt, p61.
284 C. Messenger, the Last Prussian. (London, 1991) p.144. Von Rundstedt also noted that his “Panzer division” (the lack of vehicles made the author quote this in a sarcastic way) could only cover 7 km a day.
285 After 200 miles, a divisional commander may be left with only 50 % of his combat vehicles. Perret, p.163.
286 DiNardo, Mechanized Juggernaut or Military Anachronism? pp.48,50. On November 30, 1941, General Buhle reported that only 60% of the Wehrmacht’s trucks were serviceable, motorcycle strength was down to 50 %, and he recommended that each armoured division be allotted six months of rehabilitation. Halder, pp.571-572.
Having over-extended its logistic capability during the failed attempt to capture Moscow, the Wehrmacht left itself logistically defeated and vulnerable. Adding to the problem was that from June 22, 1941, to March 20, 1942, the Wehrmacht also lost 265,000 horses, which immobilized German field artillery and anti-tank guns. Of the total amount of horses in the Wehrmacht’s service (2.7 million), 1000 died every day from air attacks and artillery fire, and the majority could not be replaced. This is one of the reasons why equipment was left abandoned during the Wehrmacht’s retreats.

All available roads became congested:

Supplies got through to us only with difficulty, sometimes not at all. The truck drivers had to make their way against the stream of units flowing back.... The best we could do... was to fill up our most important fighting vehicles (with gas); the others we had to destroy and leave behind.

A former Landser has commented that “30 mile marches with a battle at the end became so routine that few veterans of Barbarossa bothered to mention them (in diary entries).”

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287 “Trains have practically stopped running, there are no reserves and no supplies, no transportation for the wounded.” Rudel, p.49.
288 Goralski, pp. 68-69.
289 Dunn, The Soviet Economy and the Red Army, pp.225-226. Another reason was the centralized repair-system which required machines to be sent back to the Reich. Field repair was not instituted until 1942. Reinhardt, p.63.
290 von Luck, p.82.
291 Steinhoff, in Steinhoff et. al., p.124.
Horses, The Attempted Solution Fails:

A specific problem which the Wehrmacht encountered with the horses in its service was that they had not experienced the ‘trauma’ of warfare prior to the Barbarossa campaign. Horses in military employment require time and training before they become accustomed not to spook from the noises of the battlefield. On June 23, 1941, the second day of the Nazi-Soviet war, German horses were en masse given a baptism of fire. As Soviet planes roared overhead (and characteristically for Soviet fighters, very low) the terrified supply horses carrying ammunition and artillery panicked which caused the many different German units which shared the roads to collide with one another. Spooked horses which break into a gallop generally stop after a ‘change in scenery’. However on the flat, treeless, lakeless, Soviet steppe, it was possible for Wehrmacht horses with good stamina to race for miles. In these first days of the war when the Nazi-Soviet front was a matter of kilometres apart, many Soviet infantrymen were startled to find exhausted German horses hitched to artillery pieces, politely grazing and acquainting themselves with the native Russian Panjes. Daring pilots of the Red Air Force actually used their aircraft as flying sheep-dogs, “chasing the riderless horses towards Mocrany.” Thus, twenty-four hours after the commencement of

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292 The Wehrmacht kept to the few roads and trail during its advance to Moscow, and hence made easy single-file targets for Soviet fighter planes. The brunt of these attacks was felt by the infantry and the horse-drawn supply and artillery units of the Wehrmacht. Von Luck, p.81.
294 A specific and extremely hardy breed of Russian horse.
295 Piekalkiewicz, p.43.
Operation Barbarossa, Soviet forces had already successfully begun killing or destroying the means of German logistics.²⁹⁶

During the winter periods of the war the death rate of German horses actually exceeded that of German soldiers, which translates into men being stranded without transportation.²⁹⁷ Nevertheless, equally important and severe was the effect of the summer upon German horses which had to trot long distances to keep up with the panzer advance. Horses in Wehrmacht service were also not accustomed to dirt roads and the clouds of dust that they brought up while trotting:

As we marched... loose sand and clouds of dust .... The horses coughing in the dust produced a pungent odor. The loose sand was nearly as tiring for the horses as deep mud would have been.... Such conditions exhausted the horses and men if we were not extremely careful.²⁹⁸

The troops made frequent stops to water and feed their animals. Yet, from September 16 to November 30, 1941, a single division’s horse casualty rate was 1,072 of which only 117 had been wounded while the rest suffered from exhaustion.²⁹⁹

Horses performing hard work consumed 12 pounds of grain and 14 pounds of hay or grass each day. Horses with lighter duties only needed 8 pounds of grain but still

²⁹⁶ DiNardo, _Mechanized Juggernaut or Military Anachronism?_ p.44.
²⁹⁷ Goralski, pp. 68-69.
²⁹⁸ Knappe, p.213.
²⁹⁹ DiNardo, _Mechanized Juggernaut or Military Anachronism?_ p.47.
required 18 pounds of hay or grass. Grazing was not a viable option because the animal required 8 hours a day to obtain enough food in this manner, and the war did not allow for such pleasures. Since the Wehrmacht depended on horses for its transport or its mounts, the bulk of Wehrmacht shipments was always fodder. A typical Nazi division utilized a contingent of 1200 horses which ate 33 tons of feed daily. This figure represents 21 tons per day in excess of that which was needed to feed the soldiers. Whereas one ton of gasoline required five cubic feet of rail car space, five hundred cubic feet of space was needed to transport compressed fodder. Furthermore, special rail facilities had to be constructed to transport horses because the standard European rail car could only carry either eight light draft horses, six heavy draft horses, or four heavy work horses.

The harnessing of a two horse team required two men between 15 and 30 minutes to accomplish, while it took a work detachment an hour to hitch the six horses required to pull heavy artillery. Whenever a horse was replaced within a work-team, the new animal required a least one week before it got used to its teammates and was able to perform its role adequately. The larger the team, the more patience required by

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301 Ibid., p.229.
303 DiNardo, *Mechanized Juggernaut or Military Anachronism?*, p.49.
the soldiers.\textsuperscript{306} Whereas the truck driver parked his transport at the end of the day, over an hour of veterinary care was necessary for the horse.\textsuperscript{307} Grooming was necessary to remedy sores which developed around the horse’s collar area where the harness rubbed against the animal.\textsuperscript{308} Before mounted soldiers stopped for the night a scouting party was sent to find suitable lodgings and accommodations for the horses. If the horses did not receive a peaceful rest, they would have no strength for the next day’s work. However, it is up to the imagination to figure out how any horse could sleep well at the front where artillery barrages and night raids were common place.\textsuperscript{309} Furthermore, each horse required a complete day’s rest once a week in order to remain in good health, and an overworked or diseased animal required at least two months to recover.\textsuperscript{310} This limited the Wehrmacht’s mobility because a horse drawn army could not change its course without planning for its animals. Even if horses performed transport duties from the railway to the front lines it was still necessary to build stables at both points.\textsuperscript{311} The following is a description of what life was like by a mounted German soldier:

\textsuperscript{306} ibid., p.227.
\textsuperscript{307} However, in the winter Panzergruppen had to start their tanks every two hours during the night to avoid the freezing of the engine block and to prevent it from cracking. K. Rupp, in Steinhoff, et. al., p.127.
\textsuperscript{308} Dunn, The Soviet Economy and the Red Army, p.227.
\textsuperscript{309} Piekalkiewicz, p.44.
\textsuperscript{310} Dunn, The Soviet Economy and the Red Army, p.226.
\textsuperscript{311} ibid., p.227.
You don't seem to have any idea of what our operations on horse-back are like. They expect the same daily output from us as they do from the motorized troops... if a motorized unit travels 150 kilometres, it takes them maybe from ten in the morning to three in the afternoon. When they reach their destination for the day, they can park their cars and that's that. But if we cover 90 kilometres, we need 14 to 16 hours — and that means from four in the morning to ten at night. Then at the end of all that, we have to look after the horses, which takes at least an hour, and at night be on stable watch for another one or two hours. An infantryman nowadays can march maybe 50 kilometres in a day. If he's given a 20 minute break, he lies down on the grass and takes it easy. But the cavalryman has to water his horse, fetching the water from as far as 200 metres away. In the infantry, two hours' rest are two hours' rest; but we need an hour and a quarter for the horse, what with unsaddling and saddling up again, fetching the animal water, food and so on. And if we want to eat, we still have to hold the horse. What's more, if we travel 90 kilometres, we'll probably ride for only 40 — we have to lead the horse the rest of the way... which means that on top of what the infantry does, we still have 40 kilometres in the saddle and that's no trifle either.\footnote{Piekalkiewicz, p.5.}
Complications Arising From Gauge:

Between the quick moving panzer units and the plodding infantry was a gap which was filled by the *Grosstransportraum* (supply columns) and the *Eisenbahntruppe* (formations which worked to repair and convert captured Russian railroads).* German transport problems increased due to the difference between German and Soviet rail gauges, the latter being much wider.* Track adjustment was necessary before the infantry and its supplies could follow the mobile spearhead invasion group. Hence, the Germans had as much aggravation whether the Soviets destroyed their railways as part of evacuation or partisan procedures, or if the railways were left intact.* This created a strange situation where:

Instead of the logistic apparatus following in the wake of operations, it was supposed to precede them, a procedure probably unique in the annals of modern war, and one that is indicative of the desperate expediens which the Wehrmacht was forced to take in order to maintain its forces at all.*

A *Landser* commented on this situation:

On the post road after we reached Minsk, a railroad line ran parallel to the highway, so we always had a railroad to bring supplies up; however, as the Russians retreated they tried to destroy it, and repairing the railroad was a constant job, because of this, the trains were always at least twenty-five kilometers behind us, even if the railroad was repaired quickly.*

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*Reinhart, p.147.
*This was because “virtually no Russian rolling stock had fallen into our hands at all.” Keitel, p.176.
*Ellis, p.49.
*van Creveld, *Supplying War*, p.155.
*Knappe, p.218.*
According to ‘Blitzkrieg’ procedure, the panzer-spearheads loosely encircled or bypassed Soviet forces, leaving the mopping-up operations to the infantry. However, encircled Soviet troops did not always behave as their counterparts had in Western Europe, and surrender:

As our tanks and motorized units moved far out in front of the horse-drawn artillery and non mechanized infantry, the 87th Infantry Division virtually became a reserve division, although we were not designated as such. When the mechanized units ran into heavy resistance, we would catch up and help crush the resistance.... (then) we fell back again.\(^{318}\)

The isolated holdouts of Soviet resistance wrecked havoc upon the German supply system and its operators who usually encountered the Red Army before the Wehrmacht’s infantry.\(^{319}\) Consequently, after the first nineteen days of Operation Barbarossa, 25% of Grosstransportraum’s vehicles had been destroyed.\(^{320}\) In addition to this, by September 1941, 70% of all locomotives in Nazi service had broken down somewhere in European Russia due to partisan sabotage or the ramshackle work which German track layers had done while attempting to correct the gauge.\(^{321}\)

Due to the rapid Wehrmacht advance (and the distancing of the front from Reich borders) the Eisenbahntruppe concentrated on expanding existing Soviet track length rather than converting it to German gauge or constructing new rail-lines. Hence, the

\(^{318}\) ibid., p.206.

\(^{319}\) Keitel notes that partisans were so effective that in the morning he could expect a report that a single stretch of rail line had been sabotaged in over a hundred places. Keitel, p.177.

\(^{320}\) van Creveld, Supplying War, p.155.
Wehrmacht was often forced to use captured Russian locomotives where the
_Eisenbahntruppe_ had not converted the railways to German gauge. This necessitated
transfer-points (_Umschlagstellen_ ) at key track areas where the German and Russian
railways converged; to load captured Soviet rolling-stock with German supplies en
route to the _Landser_. The unloading (German) and reloading (Soviet) of trains caused
traffic to bottleneck, increasing the regulation three hour transfer time limit (from train
to train) to 80 hours.\(^{322}\) Furthermore, since the Wehrmacht supply depots were seldom
close to the established rail lines, trucks and horses had to ferry supplies to the front.

Frustrated field commanders reported:

>This system is disadvantageous in that it wastes manpower in moving stocks,
requires dual administration records, and calls for twice the usual number of
guards.\(^{323}\)

Moreover, it necessitated the Wehrmacht to maintain larger divisions employing many
more horses, trucks, and men to fulfil its transport requirements. By December 4, 1941,
General Gerke reported to General Halder that the:

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\(^{321}\) Goralski, et. al., p.81. It was a regular occurrence that a hundred locomotives broke down during a
single day. Keitel, p.176.

\(^{322}\) ibid., p.158.

\(^{323}\) Rauss, et. al., _Fighting in Hell_, p.174.
Construction of additional lines in rear area will increase elasticity, but not capacity of system. The crux of the problem is in the railroad servicing installations (coal and water). Speed is dictated by bridges, strength of rails, railroad switching points, stations, signal work. Centralized system (German) not as easily managed as Russian decentralized organization. The signal installations are geared to the Russian system. Locomotive repair shops are completely wrecked by the Russians. Are operating again but only in a makeshift fashion. We cannot increase number of engines because we lack the requisite maintenance facilities. German engines are not built to withstand prevailing low temperatures. Transport of coal supply absorbs large volume of rolling stock. Not enough personnel (instead of 16 per km, only 10, including one German); not accustomed to work under war conditions... gradual elimination of broad gauge (necessary).\textsuperscript{324}

Contrasting this situation was the Main Directorate of the Red Army Rear (RAR) which was responsible for the maintenance of roads and railways in Soviet supply areas. RAR often laid new railway tracks simultaneously as the Red Army conducted offensive operations so as not to disrupt or restrict the Soviet logistics capability and the army's momentum. Field army supply depots were situated so that railway cars stopped no more than eight to ten kilometres away from the front.\textsuperscript{325} In order to carry out their logistic duties, each sector of the Soviet front (its Main Directorate representation) possessed 300 trucks, two construction and traffic-control regiments, and two bridge-building battalions.\textsuperscript{326} The benefit of this contingent can be illustrated by the following comparison. The size of the supply corps within a German division in October 1943 was 4,047 men, 2,652 horses, 1,029 wagons, and 256 trucks; whereas the service element of a Red Army division, which was not a part of the

\textsuperscript{324} Halder, pp.577-578.
fighting unit but attached to it, was 879 men, 556 horses, 253 wagons, and 91 trucks.\footnote{Clark, p.164.}

A Wehrmacht statistical report *Kraefteberechnungen* which alludes to these figures also attempted to determine the reason behind the overall Soviet logistical advantage. The German report contained five main points:

1) The Red Army needed **fewer supplies** partly because Soviet weapons were less complex than their German counterparts which required more maintenance. Soviet civilians performed duties in the rear area however, the Wehrmacht manned hospitals, veterinary clinics, and the upkeep of railroads.

2) Soviet wagons were smaller than German wagons and did not cause Soviet horses much strain. The heavier Soviet loads were pulled by tractors instead of large teams of draft horses.

3) The German division had to **supply more men** and was equipped with heavier (in weight) **weapons**.

4) German supply units required more men to accompany them in order to defend against Soviet partisan activities.

5) The Wehrmacht was hindered by **German military philosophy** which stated that a division should supply itself directly from army depots, using its own men.\footnote{Clark, p.164.}
Conclusion:

German logistics was ill-equipped to handle the responsibility of supplying the German economy and the military effort. No efforts were made in the prewar era to improve upon railway or motor capabilities. Indeed, so inadequate were the latter, that Wehrmacht was forced to rely upon the captured lorries, locomotives and tanks of other nations, arsenals. Nevertheless, this was a gamble that did not succeed during Operation Barbarossa. As the German logistical capability was destroyed, the Wehrmacht could not sustain itself and was forced to withdraw or face military defeat. The differences in Soviet and European railway gauge made matters worse for the Wehrmacht. This forced the Germans to commit 2500 locomotives and 200,000 railcars to the Eastern Front:

This, in turn, meant that the Germans had to convert large portions of the captured rail network to their own, narrower gauge, instead of using the existing, broader Russian gauge. Thus the Soviet evacuation effort not only preserved industrial potential for future campaigns but posed a continuing and unexpected drain on the German economy. 329

329 Glantz et. al., p.73.
Field Marshal Keitel concluded in his memoirs that:

The railway transport system was never really equal to the needs of the armed forces or a war economy, despite the fact that the German Reich Railways not only expended vast quantities of materials on modernization but also but its best railway engineers and directors to work on the system. The railways performance during the winter of 1941-1942 can only be termed disastrous; from December 1941 to March 1942 it grew so critical that only the establishment of a special motor transport motorization staved off the complete collapse of the vital supply system to our troops.\textsuperscript{330}

The attempt to cure the German logistics problem through the employment of horses failed primarily because the quality and the quantity of the animals was insufficient. Furthermore, reliance on the horse meant the loss of the mobility which ‘Blitzkrieg’ strategy demanded. The fast moving panzer units could not continue their role as spearhead of the attack so long as the bulk of the supplies and infantry remained far behind the advance. As fuel supplies ran out, the panzers and the remaining motor vehicles had to be abandoned.

\textsuperscript{330} Keitel, p.176.
The Ruble
**Genesis: Economy Born**

**Introduction:**

When the Bolsheviks took power in 1917, Russia was an agrarian nation which lacked a modern industrial foundation for its economy. The disorganization and weakness of the Russian economy caused the collapse of the Tsarist war effort and the disintegration of the regime. The experience of the Russian civil war also supported the Bolshevik idea that the Soviet Union would have to revolutionize, not only its society but also its economy, to survive in the modern era surrounded by its industrialized enemies. Soviet political and military dogma presupposed the inevitability of war with the nations of ‘imperialist’ Europe. Therefore, the USSR must be empowered before the outbreak of hostilities, which Soviet military planners stressed would occur without warning. The Soviet ability to transform or rather create a modern industrial basis for their economy during the inter-war era, provided the ability to sustain the Nazi onslaught in 1941, and ultimately proved the basis for Soviet victory.

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1 There are generally two explanations for the military dimensions of Soviet economic development: that military expansion was a key part of Soviet modernization, or that perceived threats (by the Soviet leadership) of capitalist encirclement militarized Soviet economic development. L. Samuelson, *Soviet
Preparing for War:

Lenin began the process of Soviet industrialization through contracts for Western technical assistance. The mass production techniques of Henry Ford in particular, reduced costs and raised productivity in Soviet factories. As an integrated component required for the military defense of the USSR, Stalin continued to build and expand Soviet industries throughout the Thirties. In a speech delivered at a Komsomol rally in 1930, Stalin stated that the Russia of the past had continuously been defeated and victimized due to her backwardness. He asserted that within a ten year period the Soviet Union must achieve the same level of industrialization which had historically developed over centuries in Western Europe. From its advent, the Soviet defence industry adapted "active defence" plans which were also reflected in the Five Year Plans. Soviet rearmament progressed 'in depth' with the emphasis placed upon creating the potential to wage war (building of industry) rather than the amassing of weaponry:

... Soviet rearmament was not only impressive in itself, but it also revealed a more thorough and long-term character than the rearmament of any other great power, including Germany.

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2 Fugate et. al., pp.13,75.
5 Samuelson, p.1.
6 ibid., pp.30-31.
7 ibid., p.34.
By 1940, 9 000 new industrial complexes had been constructed throughout the USSR and the national income had risen from its 1928 figure of 25 billion rubles, to 128 billion rubles. Capital investments over the same period (1928 to 1940) rose from 3.7 billion rubles to 43 billion rubles and the gross output of industry increased six and a half times, from 21.4 billion rubles to 138.5 billion rubles. Within this period (1928-1940) the Soviet means of production grew ten fold from 8.5 billion rubles to 84.8 billion rubles. The overall financial effort of Soviet modernization can be illustrated by comparing the annual budget which rose from its 1928 figure of 7.3 billion rubles to 180 billion rubles in 1940. The aforementioned figures are extremely significant recalling that German ‘planning’ for Barbarossa rested on the assumption that the economic potential of the USSR was no different then that of Tsarist Russia. However, the main benefit of industrialization was not the stock-piling of arms and ammunition, but that it gave Soviet industry the capacity to replace material which would be destroyed during the war.

Soviet economic progress stagnated during the years of the Stalinist purge between 1936 and 1938, however a dramatic recovery in productivity occurred

9 Between 1938 and 1940, 3 000 were built. Great Patriotic War of the Soviet Union: 1941-1945, A General Outline, (Moscow, 1974) p.35.
11 ibid., p.16.
thereafter, largely due to the efforts of N.A. Voznesensky who was appointed chief of Gosplan (January 1938). Any central communication of economic directives which had temporarily been lost, due to the ‘removal’ of purged administrators, was quickly restored.\(^\text{13}\) There was also a greater emphasis placed upon the supervision (by central authorities) of plan fulfillment so that regular updates could lead to informed and timely directives. Furthermore, Voznesensky began the recruitment and training of rural labour for industry, to ensure that there would be no shortage of manpower as industry expanded. He also implemented a system for the allocation of raw materials which prioritized Soviet industrial production according to Moscow’s economic agenda.\(^\text{14}\) As the realities of a German threat to European Russia became more evident, the Soviets increased their efforts to relocate and geographically disperse their industries to Western Siberia and the Ural regions.\(^\text{15}\) Acknowledging that the economic basis for modern warfare were ‘regional industrial complexes’\(^\text{16}\) which provided their own metallurgical and fuel base; pre-war Soviet planning began to develop the aforementioned regions (Western Siberia, Urals) in order to facilitate production.\(^\text{17}\) These efforts resulted in: the coal basins of the Kuzbass, and Karaganda fields; the metallurgical and engineering centres at Magnitogorsk and Novo-Tagil; and the oil fields of the “second Baku” in the


\(^{15}\) The practice of building new factories in Asia started in the period of Soviet industrialization. Planners had taken the lessons of the First World War and the Russian Civil War into account. This transfer of industry was accounted for within the Five Year Plan which allocated materials and labour for these new areas over a hypothetical three year conflict. Samuelson, p.204.

\(^{16}\) eg. The New Far-East Industrial Base (Dalne-vostochnyi Krai).
east. In the first three years of the third Five Year Plan (until June 1941) the annual
growth rate of Soviet defence industries was 39 %.  

17 Harrison, Soviet Planning in Peace and War, p.49. By 1941, Soviet oil production (31.1 million tons) was 45 % higher than it had been in 1932. Great Patriotic War of the Soviet Union, p.35.
19 Great Patriotic War of the Soviet Union, p.35.
Economy on the Move:

With the expansion of industry and agriculture, Soviet planners recognized the need to augment the transport system to allow rapid movement of scheduled traffic on transit lines. Highly important railway centres such as: Chelyabinsk, Sverdlovsk, Tagil, Kirov, and Novosibirsk were expanded and upgraded to improve logistic capability.\(^{20}\) New rail lines were also built along the Volga and throughout the eastern and northern parts of the Soviet Union such as: the Vorkuta line ran north from the Volga to the Arctic, and the Transcausasia-Astrakhan line.\(^{21}\) The expansion of the railways also provided previously 'remote' reaches of the country to become integrated into the national economy. Subsequently east-west mobility (railroad capacity) across the USSR grew four and a half times between 1928 and 1940, from 93 billion ton-kilometres to 415 billion ton-kilometres.\(^{22}\) An additional 2,954 locomotives were added to rail lines after the completion of the first Five Year Plan in 1933.\(^{23}\) Such improvements allowed the Soviet mobilization plan of 1938 to make conceivable the requirement that in the event of war 5,000 trains should transport 112 rifle divisions and 10 cavalry divisions over a distance of 250 kilometers to the front.\(^{24}\) The USSR's single track capacity by this time was 25 trains (each way) while a double track could handle 50 trains.\(^{25}\) An

\(^{22}\) Voznesensky, p.15.
\(^{24}\) Reinhardt, p.105.
Administration for War Communication (UPVOSO) was also developed to continuously improve the logistic capability of the Soviet railroad system.26

During the 1920s, the Soviet government had opted to limit motor transport development and allocate the bulk of available raw materials and resources to the extension and improvement of railroads.27 This was due to the fact that the majority of Soviet transport and supply was already carried by rail, which explains the seeming neglect to improve the roads. Soviet industry and agriculture moved its supplies via train not necessarily because the roads were poor but because rail was more convenient, cheaper, faster and more accessible. Truck transportation was reserved for local supplying, and there was no trend of long distance hauling as in North America.28 The improvement to the railway system coincided with the Soviet policy to bolster heavy industry at the expense of the consumer economy. That is to say, that there was no need to build roads when there was no demand, or a suppressed demand, for cars and trucks. By 1940 the ratio of Soviet rail to road capacity was almost fifteen to one, and although this figure appears disproportional it is comparable to similar ratios in Western Europe.29

28 Davies, et. al., p.158.
29 Westwood, Soviet Railways Today, p.66, 34-44.
Nevertheless, the Soviets did improve and construct new roads during the first two Five Year Plans. In 1928, there were 1 400 000 kilometres of dirt roads and 32 000 kilometres of hard surfaced roads. By 1937, 327 000 kilometres of roads were constructed and repaired (built or paved), for a total of 400 000 kilometres of graded and 70 000 kilometres of paved roads. Many authors comment that even after such improvements the Soviet Union only possessed one kilometer of road per 100 square kilometres of territory.\textsuperscript{30} However, this statistic is misleading because most Soviet roads were situated in the more populated western part of the USSR, also where most of the military was stationed. Furthermore, the improvements or construction of roads in under-developed areas was restricted to geographical locales which were planned for the expansion of industry such as the Volga, the Urals, and Western Siberia. Therefore:

The vast undeveloped areas east of the Urals reduced the average kilometer per square kilometer to a meaningless figure. From 1933 to 1937 the Russians doubled the mileage of improved roads almost all in the developed areas west of the Urals. More than 50\% of the new roads were built in access to railroads.\textsuperscript{31}

A far more important consideration is that by 1940, the Soviets had built highways linking major military and industrial centres: from Moscow to Minsk, Leningrad, Kiev, Gorky, and Kharkov; from Leningrad to Kiev; and from Kiev to Zhitomir.\textsuperscript{32}

\textsuperscript{31} Ibid.
\textsuperscript{32} Ibid.
Contingency Planning:

Many of the new Soviet industries which were created in the pre-war era possessed civilian uses but were designed in a way which would make them readily adaptable for military production.\(^\text{33}\) For example, tractor factories built at Stalingrad and Chelyabinsk were designed so that they could be converted to tank production in a matter of days. This was also true of many automobile and locomotive plants. When the war began, a children's bicycle plant began producing flame-throwers, while the typewriters of another plant gave way to automatic rifles.\(^\text{34}\) Most civilian factories were equipped with contingency plans so that a wartime switch to the manufacturing of ammunition and small armaments would be possible at the shortest notice\(^\text{35}\):

In the plan-period, the development of armaments production should mainly be directed at utilizing the overall industrial base – through the assimilation of production in civilian factories. Better specialization among the factories in the defence industry should be instituted.\(^\text{36}\)

Soviet contingency planning delegated the responsibilities of war production to plants which already had the necessary technological, material, and labour skill requirements. In this manner the feasibility of Soviet contingency plans were made more realistic.

Indeed, on April 30, 1938, an official Military-Industrial Commission was set up under

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\(^{32}\) Ibid.

\(^{33}\) Gosplan initiated three economic-wide contingency plans as early as 1927-28, the main goals of which were: to distribute materials to the main war producers as soon as hostilities commenced, to establish a priority and time-scheduling for the transformation of the Soviet economy to a war footing, and the creation of a long-term defence plan. Samuelson, p.78.


\(^{35}\) Harrison, Soviet Planning in Peace and War. p.54.

\(^{36}\) Samuelson, p.204.
Sovnarkom’s (Soviet Council of People’s Commissars) Defense Committee with the responsibility of preparing the mobilization-readiness of individual regions within the USSR. By July 15, 1939, a representative from every Soviet factory had been appointed to aid the Commission in its development of an All-Union War Mobilization Plan. In order to gauge the effectiveness of the preparations made by the Commission, an “experimental partial mobilization” was carried out in September 1939. The results of this test revealed certain oversights and defects which were corrected before another trial economic mobilization was carried out after the Winter War (1940, with Finland).

From 1936 to 1940, the Soviets modernized their armed forces and improved many weapon designs. By 1941, strategically placed reserves (dumps) of specialized weaponry such as T-34 medium-tanks, KV heavy-tanks, artillery and ammunition were situated throughout the USSR. The speed and effectiveness with which this was carried out, in a mere six month period (January to June 1941), was accomplished due to the sub-contracting of defence orders to civil industries. This measure had the advantage of giving those in civilian manufacturers the background training they would need for wartime:

37 Ibid.
38 Dunn, _The Soviet Economy and the Red Army_, p.32.
Spreading defense orders around civilian industry created a lot of ‘part-time’ defense plants whose main contribution remained in the civilian economy but, which had acquired a foretaste of what would be involved in a real war from the point of view of production.⁴⁰

The payoff of this planning and experience was realized nine days after the Nazi attack on the Soviet Union when Sovnarkom was able to institute its first economy-wide mobilization plan. This plan, which was activated on June 30, 1941, was based upon the results and knowledge of preparatory peace-time economic trials.⁴¹

⁴⁰ Ibid.
Conclusion:

Although the method of Soviet industrialization can be questioned (the human factor), it is beyond doubt that its achievement provided the USSR's defence against the Nazi onslaught. The pre-war Soviet geographic dispersion of industries culminated in June 1941 with the Asian-USSR producing: 50% of Soviet tractors, 39% of Soviet steel, 35% of Soviet coal, and 25% of Soviet electricity. In the area of nonferrous metallurgy, the Asian-USSR was the leading supplier to the Soviet economy. The point is that by June 22, 1941, the Soviet Union had secured for itself a powerful industrial base which was immune from enemy attack. The pre-war Soviet economy also had many inherent qualities which made its transition to war rather simple. Furthermore, Soviet pre-war economic planning was long-term and economy-wide. Soviet industrialization was a process that was conducted "in depth" rather than "in width". In the battle of attrition the Soviets had the advantage over the German economy because prewar Soviet planning had concentrated on the building of the means of production rather than the stock piling of weaponry. Unlike the Germans, the Soviets built new railway lines to service a proportional growth in economy. Additionally, the rapid transformation of civil industries to war production was an element of the 1930s Soviet industrialization process. It is interesting to note that while both totalitarian systems stressed 'the coming of war' in their ideologies, the Nazis translated this into an economic prerogative emphasizing offensive capability; while the
Soviets relied on a ‘defensive economic mobilization’ which stemmed out of their fear that they would be the victims of an attack.

\[42\] Wright, p.57.
Exodus: Economy Saved

Introduction:

The evacuation of Soviet industry which was accomplished within the first six months of the Nazi-Soviet war, remains one of the most heroic feats of economic history. It is not an exaggeration to say that an entire nation ‘moved’. The Soviet evacuation was an exodus which allowed the Soviet government to salvage much of the valuable economic wealth of the industrial facilities in the European-USSR. What is still more remarkable is that production levels recovered in a relatively short period of time during the unsuitable circumstances of war. This could not have been possible without a degree of bureaucratic administration. The Soviet government and its leadership, after temporary inaction (due to Stalin’s crisis of nerves), began to organize short term plans for the evacuation of manpower and resources. Due to a shortage in these very elements (eg. manpower to dismantle factories and man railways) the Soviet government was forced to maximize its efforts in this initial period of the war. The disruption to the Soviet economy and its administration caused by the Nazi attack, forced the Soviet government to temporarily decentralize the command of the evacuation process. The individual accomplishments of the population were instrumental in the success of this procedure.
Reaction to Calamity (The Evacuation Councils):

When the Wehrmacht attacked the USSR in June 1941, the Soviet economy, although greatly empowered by the industrialization programme of the 1930s, was still in a transition stage. The last two months of 1941 was the worst time for the Soviet economy during the entire war because, although European-Soviet factories had been evacuated, most had not yet been reconstructed in Soviet Asia. From August to November 1941, 303 Soviet ammunition works ceased production due to evacuation or German occupation. The monthly loss sustained during these months was: 8.4 million shell bodies, 2.7 million mortar bomb casings, 2 million air-bomb casings, 7.9 million fuses, 5.4 million detonator caps, 5.1 million shell casings, 2.5 million hand grenades, 7 800 tons of gunpowder, and 161 000 tons of ammonium nitrate.\(^3\) By November 1941, the Germans occupied an area of the Soviet Union which contained: 40% of the total population, 63% of the coal, 68% of the pig iron, 60% of the aluminum, 38% of the grain, 84% of the sugar, 38% of beef and dairy cattle, 60% of the pigs, 58% of the USSR’s steel producing industries, and 41% of nation-wide railway mileage.\(^4\) In November and December coal production ceased in the Donets and Moscow Coal Basins. Rolled steel and iron production had fallen to 300% of its pre-war output by December 1941, while non-ferrous rolled metal production fell by 43 000%. The production of ball barrings, essential for the manufacturing of tanks, aircraft and

\(^3\) Voznesensky, p.38.
\(^4\) Ibid.
artillery, had fallen by 2100%. Additionally, the Red Army’s casualties for the first six months of the Nazi-Soviet conflict amounted to the total strength including reserves and rear echelons, of its pre-war strength.

The evacuation of the Soviet population and industry was considered so paramount that the government’s decrees for the organization of these tasks preceded the establishment of the Soviet war cabinet by three days. Immediate plans for the evacuation of women and children in Moscow for example, took place on June 23, 1941 as the Order for the Evacuation of Children of Moscow. On June 24, 1941, the Soviet Central Committee and Sovnarkom established a Council for Evacuation and decreed that its first priority was to be the “removal and relocation of groups of people and valuable resources.” On June 27, 1941, Sovnarkom issued “The Procedure for Evacuating and Relocating Groups of People” which was a resolution for the evacuation of specialized workers, military personnel, the elderly, women, children, and industrial equipment. This was followed on June 29, 1941, by a directive “To Party and Soviet Organizations in Front-line Districts” which stated that the enemy should be denied any resources found upon occupied Soviet territory. Resources which could not

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45 Ibid.
46 Indeed, Bialystok and Grodno had already sent 30 evacuation trains on the first day of the war. Kumanov, in Wieczynski, p.175.
48 Harrison, Soviet Planning in Peace and War. p.65.
49 Kumanov, in Wieczynski p.167.
be evacuated were ordered to be destroyed. On July 4, 1941, GKO (The State Defense Committee) directed Voznesensky to compile:

a wartime economic plan of provision for defense of the country, taking into account utilization of existing resources and enterprises on the Volga, in Western Siberia and the Urals, and also resources and enterprises removed to the indicated regions in the course of evacuation.

The official Sovnarkom decree "On the Evacuation of the Population in Wartime" was issued on July 5, 1941. On that same day, the Council for Evacuation decreed that priority be given for the transfer of mothers and children through the auspices of child-care facilities.

The initial evacuation of Soviet industry and citizenry were not dealt with separately but treated as complementary issues. The majority of workers in close proximity to the front aided in the disassembly and loading of their factories on to trains which they accompanied to their final destination. Only in September 1941, when the evacuation of front-line Soviet industries had been completed, was the process and responsibility for the evacuation of industry and civilians placed under two separate administrations. Three sub-committees within the Council for Evacuation were formed from members of Sovnarkom, Gosplan, various commissariats, and Trade Unions whose tasks became: the movement of productive forces which included

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50 ibid., p.63.
51 ibid., p.65.
52 Werth, Russia At War, pp.89-96.
53 Ibid.
employees as well as enterprises, the movement of refugees, and the coordination of transport.\textsuperscript{54}

The Council for Evacuation operated through plenipotentiaries, local commissars, deputy commissars, and Party secretaries who were responsible for gathering and transporting their respective evacuees. The plenipotentiaries of the Council who numbered 3000 by 1941, were given enabling powers to stop, check, or unload all non-military railway freight. These plenipotentiaries formed part of an overall Inspectorate of the Council for Evacuation which was headed by Alexis Kosygin.\textsuperscript{55} Kosygin was also the representative of the Soviet government who was given the responsibility for the evacuation of industries from Moscow which began on October 10, 1941. However, since there was also a rapid German advance through the southern USSR, the Soviet government organized a separate Council for Evacuation for southern sector of the front on October 25, 1941, which was headed by Anastas Mikoyan. Similarly, a separate Council for Evacuation for the northern USSR was formed under the leadership of Shvernik and later passed to Kaganovich.\textsuperscript{56} As the various front situations stabilized, the unnecessary bureaucracy was eliminated and these separate Councils were dissolved. Mikoyan’s Council was dissolved on December 19, 1941, while Kaganovich’s Council was absorbed by the Committee for Freight Dispersal

\textsuperscript{54} Erickson, \emph{The Road to Stalingrad}, pp.113-117.
\textsuperscript{55} ibid, p.144.
\textsuperscript{56} Ibid.
supervised by Mikoyan. The latter measures was taken to improve the coordination of railway transport to and from the northern section of the Soviet front especially surrounding Leningrad.\textsuperscript{57}

On July 5, 1941, the Politburo of the CPSU organized "evacuation points" at many railway centres between European and Asian Soviet territory. These stations received and dispatched evacuees, organized the meals for their journey, and provided medical examining stations through which all transients passed.\textsuperscript{58} By August 22, 1941, 120 "evacuation points" had been established throughout Soviet territory. Over 3 billion Rubles were spent by December 1941, to aid Soviet evacuees. These funds paid for food bundles, dinning halls, showers and disinfection centres which guaranteed hot water.\textsuperscript{59} Sanitation was strictly enforced by city authorities. In places with no adequate plumbing or sewage system, human excretion was collected at designated places. Upon arrival at Novosibirsk, for example, evacuees found a "sanitation station" equipped with a washing area, a nurse and a medical examination room, locker room, play area for children, and waiting area for those en route:

\textsuperscript{57} Harrison, \textit{Soviet Planning in Peace and War}, p.67.
\textsuperscript{58} Kumanev, in Wieczynski, p.167.
\textsuperscript{59} \textit{ibid.}, pp.167,169.
These sanitary bureaus were a war measure to prevent epidemics, especially of typhus. Therefore they provided not only baths, but also the disinfecting of clothes. No train tickets were sold, no one was admitted to a hotel or public lodging without a paper certifying that he had undergone the "sterilizing" of a sanitary bureau.  

There was also a facility for child-care in Novosibirsk which provided 200,000 mothers with its service during December 1941. Likewise, "everywhere, in each town, especially along the railroad junctures there was a Room For Mother And Child."  

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60 Wettlin, p.221.  
61 ibid., pp.222,223-224. Italics mine.
Methods and Accomplishments:

There were 1523 factories (monetary value, 92 billion rubles) which were evacuated by December 1941, 1360 by August. However, “their economic significance was out of all proportion to their number”. One-eighth of total Soviet evacuated economic assets were defense enterprises, key metallurgical, chemical, and engineering works, whose “importance to Soviet survival in 1942 and 1943 can hardly be doubted.” During the month of August in the Dnieper region a daily rate of: 3 000 rail cars evacuated iron and steel equipment, 1 000 rail cars transported electrical equipment, and 400 rail cars carried the manufacturing potential of the chemical industry to the safety of Soviet Asia. From August 8 to August 15, 1941, 26,000 rail cars helped evacuate Ukrainian industry and during the same time 8 000 rail cars transported 498 factories from the Moscow region. The majority of these enterprises were able to resume production by December 1941 when the first phase of the Soviet evacuation was completed. Of the 100 aircraft factories which were evacuated, the largest involved the transport of 30 000 workers, 10 000 units of equipment and 200 000 square metres of factory space. This was supplemented by the evacuation of

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62 In five months 1.5 million freight cars were used to transport evacuated industries. *Great Patriotic War of the Soviet Union*, p.77.
63 Davies, et. al., p.166.
64 Ibid.
66 Dunn, *The Soviet Economy and the Red Army*, p.33. In December 1941 the Soviets turned their attention to clearing up bottlenecks in which was clogging railway lines. A Traffic-Transit Committee (*Kommitet po Razgruzke*). Erickson, *Road to Stalingrad*, p.235.
weaponry design bureaus, technological schools, and 415 vocational and factory apprenticeship schools with their pupils (270,000 people). 68

Many of the evacuated materials from smaller plants were incorporated into the already existing, larger complexes in the Eastern half of the USSR. This served to enlarge existing facilities without hindering current production levels as construction occurred. The Magnitogorsk industrial complex for instance, incorporated the machinery of 34 evacuated Soviet European factories. 69 Most of the evacuated staff were re-trained during the duration of the factory's relocation, which enabled production levels to increase as soon as renovations had been completed. 70 Due to such procedures most plants recommenced production within six to eight weeks of their evacuation. An example of this is the Kharkov Tank factory which was evacuated to the Urals in November 1941, and which sent its first trainload of T-34s to the front on December 8, 1941. 71 Of the 1360 large-scale industries which were evacuated between June and August 1941: 455 were rebuilt in the Urals, 250 in Central Asia and Kazakhstan, and 210 in Western Siberia. The remaining plants were not reconstructed or incorporated into existing facilities until after the spring of 1942. Only 55 evacuated

69 Davies, et. al., p.80.
70 30-40 % of workers were evacuated with their industries while the rest volunteered or were recruited for various military and civil posts. Great Patriotic War of the Soviet Union, p.79.
71 Davies, et. al., p.80.
enterprises remained inoperative by 1943, but this was due to a lack of labour to employ within these plants.\textsuperscript{72}

From June to December 1941, there were an average of 50 daily attacks by the Luftwaffe upon the Soviet transport system.\textsuperscript{73} In order to combat disorganization and confusion, on August 1, 1941, Stavka re-designated the responsibilities of the Soviet Military Transport Service for the delivery and supply of troops and equipment, to the Main Directorate of the Red Army Rear.\textsuperscript{74} The chief of the Main Directorate, A.V. Khrulev, was empowered to requisition supplies from sixteen different commissariats in order to supply the Red Army with: food, clothing, mobile workshops, and local transportation.\textsuperscript{75} The Main Directorate of the Red Army Rear combined the staffs of: Chief of the Rear, Military Transport Directorate, Fuel and Supply Directorate, Military Medical Directorate, and the Veterinary Directorate.\textsuperscript{76} According to the “Regulation Concerning the Organization and Work of the Army Rear”, the Main Directorate was concerned with: supplying the army, the accumulation of reserve of materials in the rear, the creation of mobile reserve caches, the organization of railroad and water

\textsuperscript{72} Harrison, Soviet Planning in Peace and War, p.77.


\textsuperscript{74} A. Khrulev (Quartermaster-General of the Red Army), in Bialer p.369. Restructuring of the Red Army’s rear organizations took place in August 1941. Planning, transport and supply functions were placed under a unified command. Kumanev, in Wieczyski ed. Operation Barbarossa, p.166.

\textsuperscript{75} Westport, Soviet Railways Today, p.22. Chief of Rear Services (Khrulev) (Nachalnik tula Krasnoi Armii), by Order # 252, July 31, 1941, Khrulev became one of sixteen Deputy Defence Commissar who had a permanent place on Stavka and who also maintained regular correspondence with GKO. Erickson, Road to Stalingrad, p.225.
transportation for supply and evacuation purposes, the organization and employment of labour for local industrial production and in support of the army, the maintenance of roads in the rear area, the evacuation of sick and wounded personnel and horses, the supply of medical treatment, and providing rear-area security.  

The Main Directorate also recorded Soviet material loses and noted replacement requests, as well as supervised the salvaging of all damaged or abandoned battlefield equipment (German and Soviet), its repair and reissue. Indeed, the Luftwaffe soon became aware that its air-strikes represented a half-measure against the Soviet war economy unless Soviet equipment was completely destroyed, thus making it unsalvageable. Each sector of the Soviet front was appointed a representative of the Main Directorate and they convened with Stalin on July 31, 1941 to coordinate their efforts. Khrulev also re-organized the entire Soviet supply system, improving logistic capability by extending railroads to factory facilities and building new factories next to existing railways. In certain cases rail cars drove directly into the factory and were

76 Khrulev in Bialer, p.372.
78 Mobile repair base (podvizhnaya remontnaya baza – PRB) and “salvage collection points” (SPAM), were introduced at the end of 1941 and attached to Soviet tank brigades and regiments. Erickson, Road to Stalingrad, p.225. D. Reynolds, et. al., Allies at War: The Soviet, American, and British Experience, 1939-1945. (New York, 1994) p.268. and Werth, Russia at War, p.206.
79 K. Uobe, Russian Reactions to German Airpower in World War II. (New York, 1964) p.87.
loaded right off the platform. This saved valuable time which was otherwise used to marshal rail cars or shunt locomotives back and forth.81

The feat of the Soviet evacuation was completed with the aid of 30 000 trains comprising 1.5 million carriages (the equivalent of 1 600 000 ten-metre long trucks) which if placed from end to end would have formed a solid line from the Bay of Biscay to the Pacific Ocean.82 In the initial interval of the Soviet evacuation from June 1941 to February 1942, a total of 10 million people were rescued.83 By July 1941, half of the USSR's trucks were being used for evacuation purposes. Trains carrying non-perishable items were often unloaded along the tracks where they were stopped by Khrulev's inspectors, and re-routed for immediate evacuation assignment.84 Trains used to evacuate the Soviet population, traveled a daily average distance of 600 km.85 From June to August 1941, 2.5 million Soviet soldiers were transported to the front.86 The most effective testimony for the Soviet railway system is that within a fifteen day period, 3.25 million soldiers were transported mainly from their postings on the Japanese

81 Ibid, also see the concluding points of my chapter, "Logistic of Defeat".
82 Harrison, Soviet Planning in Peace and War p.78.
83 Khavin, p.142.
86 From July to November 1941, 6 million people were evacuated. Linz, "World War Two and Soviet Economic Growth, 1940-1953." in Linz, p.13.
border, to various sectors of the Moscow front in preparation for Marshall Zhukov's counter-offensive on December 6, 1941.87

Besides the logistical aspects of the evacuation, there are innumerable human accomplishments which contributed to the rehabilitation of the Soviet war economy.88 The evacuation of factories along the main railway line through Byelorussia continued under heavy bombardment despite the fact that throughout July and August, the railway line was damaged on 49 occasions.89 In the Urals, workers built a 10 000 square metre factory complex equipped with sanitary and technical facilities within ten days because of the urgent need to re-start artillery production. Similar complexes of 12 000 and 14 000 square metres for weaponry production, were completed within 35 and 37 days respectively. The Zaporozhstal steel plant was dismantled in 19 days (from August 19 to September 5, 1941) and its 320 000 tons of equipment occupying 16 000 rail cars, were transported to the Urals.90 The generator of the large turbine at Zuevo power station was dismantled and loaded for transport within eight hours.91 In another instance of record breaking reconstruction, the last train carrying the equipment of a dismantled assembly plant arrived at its Volga destination on November 26, 1941. On December

87 Ellis, p.77.
88 For example, the evacuation of, and the continuing production of the Kirov plant in Leningrad. Kislitsyn et. al., Leningrad does not Surrender, (Moscow, 1989) p.41. also see A. Werth, Leningrad, (New York, 1944) chapter on “Endurance: the Kirov works”, also note that the author has dedicated his book “to the workers of the Kirov plant”.
89 Erickson, Road to Stalingrad. p.234.
10, 1941, the reassembled plant produced its first MiG fighter and was able to send thirty MiGs and three *Shturmoviks* (Ilyushin 2 fighter-bomber) to the front by the end of December.\(^2\) In total, the efforts of all Councils for Evacuation rescued 25 million people from the occupied regions of the Soviet Union.\(^3\) Indeed, the Soviet evacuation effort amounted to "an economic Stalingrad' which mattered more than the great victory won later by arms on the banks of the Volga, and indeed it made the latter possible."

Nevertheless, the Soviet government is often criticized for not having exerted more effort for the evacuation of its industries and population. This accusation is leveled because many Soviet industrial plants remained operational until the front collapsed around them. In such cases if evacuation occurred at all, it was completed under unfavorable circumstances. Although these observations are correct, they do not explain the economic significance nor the necessity of such Soviet procedures. Production facilities which operated near front line districts or were kept operational as the front advanced deeper into Soviet territory, empowered the Red Army with badly needed materials and war equipment.\(^4\) This enabled the Red Army to resist the Nazi

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\(^3\) Davies, et. al., pp.144-146.
\(^4\) Harrison, *Soviet Planning in Peace and War*, p.78.
attack to the degree which was attained, often delaying the Wehrmacht’s advance for weeks due to well equipped pockets of Soviet resistance:\textsuperscript{96}

Sacrificing immediate production, many factories closed in August, packed up, and moved to the Ural Mountains. But because their products were needed, some plants remained in production until too late to be moved. Only 17 of the 64 iron and steel plants in the Donbas were evacuated between October and December 1941. The Kharkov tank factory was being dismantled as the Germans arrived.\textsuperscript{97}

German sources certainly dispute any claim that the Wehrmacht captured any valuable Soviet industries or war materials, and this not only due to the Soviet scorched-earth policy, but because of an efficient and highly effective evacuation.\textsuperscript{98} This is why, for example, the only 10 000-ton press in the USSR (in Novo-Kramatorsk) was kept operational until the last possible moment and then evacuated within five days. When the work was completed on October 21, 1941, the Wehrmacht was only seven miles away from the factory and the press had been loaded on the last east-bound train, leaving a group of 2500 technicians to walk 20 miles to the nearest evacuation point.\textsuperscript{99} Another illustration of ‘last minute’ evacuation is the Red October Tractor Plant in Stalingrad which was mobilized to produce tanks. General Chuikov who was the head of 62nd Army, received Military Order #164 on September 25, 1942, "to prevent the enemy from reaching the \textit{Barrikady} and \textit{Kransy Oktyabr} worker’s settlements, and to

\textsuperscript{96} Uebe, p.88. (re: Gorki and Stalingrad)
\textsuperscript{97} Dunn, \textit{The Soviet Economy and the Red Army}, pp.32-33.
\textsuperscript{98} Rauss, et al., \textit{Fighting in Hell}, p.89.
prevent any advance by the enemy towards the Tractor workers' settlement."

By the end of August 1942, the Nazis were within 800 metres of the Red October Plant and yet it was only on September 2, 1942, when Red October began evacuation to the other bank of the Volga. Through the fortitude of its workers, Red October supplied the Stalingrad army with 200 badly needed tanks in the month of September. An additional reason for delaying the evacuation of the Stalingrad area was because Stalingrad was also the main transport juncture for oil deliveries from the Caucasus and for the deliveries of arms shipped from the factories in the Ural and Volga region. That is to say that the untimely evacuation of Stalingrad might have paralyzed Soviet logistics.

The adaptability of Soviet planners to deal with a situation in flux also ensured that the Soviet economy would not collapse under the strain of war. The Soviets resurrected the Council for Evacuation (southern USSR) on June 22, 1942, after Hitler ordered the Wehrmacht on April 5, 1942, to destroy all remaining Soviet defence industries and seize the oil of the Caucasus. The reconstituted southern Council completed the evacuation of 150 enterprises from the Don-Volga area, of which 40

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99 Erickson, Road to Stalingrad, p.234. The plant was kept operational because its press was used to hammer-out the last, and badly needed, of heavy equipment in that Soviet defence sector.
101 150 industries were eventually evacuated from Leningrad and Stalingrad between 1942-1943. Linz ""World War Two and Soviet Economic Growth, 1940-1953"" in Linz, p.13.
102 Khavin, p.143, ""... every night the Russians drag everything needed by the Red Guardsman across the Volga."" Rudel, p.71.
were large-scale industrial plants. In addition to this, hundreds of thousands of civilians were also evacuated from this area before the Wehrmacht reached Stalingrad. During the evacuation of the Don-Stalingrad area, Soviet trains ran every twelve to fifteen minutes. In nearby Astrakhan, evacuated supplies from 1 300 rail cars were unloaded onto street-cars and then the trains were re-routed in order to avoid blocking other incoming traffic. In a parallel process, from November 1 to November 20, 1942: 160 000 men, 10 000 horses, 14 000 vehicles, 6 700 tons of ammunition, 4 000 tons of rations, 600 guns, and 430 tanks, were delivered to the Stalingrad front. Had the Soviets immediately evacuated all industrial plants from all vulnerable areas, the Red Army would not have had any supplies or weaponry with which to defend their country in the most critical (and decisive) period of the war. Hence, "could more have been evacuated with better management, allowing reduced costs and sacrifices? The answer seems to be: probably not." 

No examination of the Soviet evacuation would be complete without a brief discussion concerning the plight of agriculture. Due to the Nazi occupation of the most fertile and concentrated food producing areas of the USSR, there was barely enough food to feed the remaining population under Soviet control. Nevertheless, with the

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104 Great Patriotic War of the Soviet Union. (Moscow, 1974) p.124..
exception of "the nightmarish experience of Leningrad, the only mass starvation appears to have taken place in occupied areas." All Soviets received a daily food ration whose quantity varied according to the individual's occupation, a higher ration going to those in the army and war industries. The first Soviet directives concerning agriculture were: to gather the harvest as fast as possible, to evacuate as much agricultural machinery and livestock as possible, and to destroy whatever was left when the Soviets evacuated the territory. On June 26, 1941, the Central Committee of the Ukrainian Communist Party and the Ukrainian Sovnarkom (Council of Ministers) mobilized all available labour for agricultural work. Hundreds of teachers and 84,000 high school students from Sumy, 70,000 students from Zaporozhe, and 50,000 school children from the Voroshilov district were strafed by enemy artillery and dive bombers as they worked in the fields.

Many collective farms brought in their harvest within 12 days instead of the planned 18 day limit set by the Ukrainian Sovnarkom. People worked 20 hours a day in order to achieve this, there were even night shifts which worked by moonlight. Similar to industrial evacuation, the evacuations of agricultural machinery did not begin

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108 ibid., p.17.
109 ibid., p.21.
110 ibid., p.19.
until mid-July 1941, in order to help salvage as much of the harvest as possible.\footnote{Barber, et. al., pp.56-58.} It was logical to sacrifice a few hundred tractors for the extra tons of grain which were harvested with the help of these machines (and most of the machines were destroyed before the Soviets left). By August 20, 1941, 88% of the Soviet harvest outside the war zone had been collected.\footnote{Note that on August 17,1941, the Nazis captured Dniepropetrovsk and were just breaching the ‘Dnieper Line’. The Battle of Kiev did not begin until September 10, 1941.} Regarding the grain within the war zone, most of it had been planted in the spring and was thus not ready to be harvested because it was still in the fields during October when the first signs of winter arrived (1941 being the coldest and earliest winter in over a century).\footnote{Barber, et. al., pp.56-58.} The Soviet evacuation or destruction of agriculture was a major factor in stifling the Wehrmacht’s campaign. “Even if time was of the essence, the Russians succeeded in carrying off large numbers of cattle, as well as a substantial amount of equipment and supplies.”\footnote{Rauss, et al., Fighting in Hell, p.89.}
Conclusion:

Despite its stunning evacuation achievements, Soviet economic production did not recover to its 1940 levels until Spring 1942. The drawing of manpower into the armed forces and to help with the evacuation of industry, caused a decline in the Soviet labour force from 31 million in 1941 to 18 million in 1942. Nevertheless, the adjournment of the German offensive (during the winter 1941-42) gave the Soviet economy the respite it needed to partially recover. By the summer of 1942, the Soviet economy was almost completely placed on a war footing. Evacuated Soviet industries had already begun to return badly needed war supplies to the front. In fact, "by this time the revamped Soviet economy was much more efficiently geared for war than the German one." The Soviets constructed 10,315 factories in 1942, 10,418 in 1943, and 20,647 in 1944. The success of Soviet economic rebuilding and reconstruction was so dramatic, that the Schwarze Korps newspaper of the Nazi press was forced to admit in 1943:

That new masses of people and machines arise from the boundless Soviet steppes, for it looks as if some great magician were molding them in huge numbers out of Ural clay.

In 1942, Soviet industry produced 25,436 aircraft (a figure 60% greater than 1941) and 24,688 tanks (three and half times 1941 production). To appreciate these figures one

116 ibid., p.121.
118 Khavin, p.147.
119 ibid., p.150.
must recall that Soviet industrial output in 1942 originated solely from the evacuated and pre-war industrial plants in Soviet Asia.\textsuperscript{120} Compared to 1940, the 1942 output of the Ural region increased by 500\%, in the Volga region by 900\%, and by 2 700\% in Western Siberia.\textsuperscript{121} By the end of the war the Soviet economy out-produced its Nazi rival by 83\% in tanks, 54\% in planes, 340\% in mortars, and 400\% in guns.\textsuperscript{122}

After six months of war the Nazis had deprived the Soviet Union of one third of its industrial capacity and occupied a geographic area which had sustained the Tsarist Russian empire for most of its existence. This is “analogous to occupation of the United States east of the Mississippi (river)”\textsuperscript{123} Although the Bolsheviks had understood the need to geographically disperse newly created industries throughout the USSR, pre-war industrial development also focused on improving the existing Soviet-European facilities. The evacuation of these facilities, together with much of each plants’ labour and resources, completed the pre-war task of re-locating industrial capacity to Soviet Asia. Production levels were able to rise at a dramatic pace also because of the pre-war development of economic complexes in the Ural, Volga, and Siberian regions to support and sustain industry. With the majority of the Soviet’s economic capacity safe behind the Urals, the Red Army was empowered with the

\textsuperscript{120} Nove, p.274.
\textsuperscript{121} Davies, et. al., p.92.
\textsuperscript{122} Khavin, p.153.
\textsuperscript{123} Dunn, \textit{The Soviet Economy and the Red Army}, p.111.
economic ability to wage war. Furthermore, the evacuation of Soviet rolling stock deprived the Wehrmacht of the logistic capability it was hoping to seize.
Introduction:

Despite the heroic efforts with which Soviet industry was evacuated and relocated, the Soviet economy did not begin to recover from its traumatic experience of the Nazi invasion until Spring 1942. Although individual production facilities had begun to restart the manufacturing of weapons and munitions, this represented a sporadic effort rather than a coordinated nation-wide mobilization of the economy. This was reflected in the operational ability of the Red Army to wage war. That is to say that the battles of Moscow and Stalingrad were fought as Soviet defensive measures. This was not only because of the military situation which favoured the Wehrmacht, but also because the Soviet economy could not provide the Red Army with the necessary output of war materials to sustain offensive operations. This point can be accentuated with reference to the additional counter-offensives which were conducted along the Moscow front. At Stalin’s insistence these operations were undertaken in the spring and summer of 1942, but limited gains were made at the expense of a substantial material loss. However, by the battle of Kursk (July 1943), the Soviet economy had surpassed the production capability of the Nazi economy. The measures by which this resurrection of the Soviet economy was possible is the subject of the following section.
Centralization of Economy:

June to December 1941, had been a six month period of emergency governmental decrees and *ad hoc* local initiatives. Much of the evacuation efforts, the conversion of the civil economy to war production, and the development of new production facilities was the work of improvisation and not central planning. Nevertheless, this was only the first phase of the Soviet war economy and not the basis of normality. Yet even during this phase, attempts at central economic planning also produced valuable results. The establishment of a State Defense Committee (GKO) on June 30, 1941, was the first measure to simplify the administration of the Soviet economy and its mobilization for war. The administrative organs of the Communist Party remained dormant or collapsed during war time to enable GKO to govern the country by decree, direct intervention or through its plenipotentiaries. Entire pre-war Soviet ministries were eliminated to shrink the chain of command and to eliminate wasteful time-consuming bureaucracy. In many cases even the authority of the remaining commissariats were bypassed so that industries and evacuation personnel received their orders (and reported) directly from GKO. The GKO “in effect became the government”, it:

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124 GKO (State Committee for Defence) (Gosudarstvennyi Komitet Oborony)
125 Erickson, Road to Stalingrad. p.227.
126 ibid, p.274.
superimposed upon the entire system in order to circumvent the traditionally 
ridged and time-consuming aspects of bureaucratic procedure and then to 
provide the Soviet regime with both the administrative flexibility and the 
centralization of control that the war effort required.\textsuperscript{127}

Each member of the GKO was assigned with a specific economic duty in 
addition to his other ministerial responsibilities: V. Molotov was in charge of 
overseeing tank production, L. Beria replaced Voznesensky in 1942 as the overall 
planning director of the economy, Malenkov was responsible for aircraft and aircraft 
engine production, Voznesensky oversaw the production of armaments and 
ammunition, Mikoyan ensured that the production of consumer goods was kept to a 
bare minimum, Kaganovitch organized railway transport, and Voroshilov became the 
economic procurement officer for the Red Army.\textsuperscript{128} The GKO held regular ‘drop-in 
sessions’ where specialists in specific fields of production were invited to address the 
GKO to help resolve economic problems.\textsuperscript{129} Khrulev notes that the GKO also held 
regular brain storming sessions so that “the procedure of reacting an agreement with 
Gosplan, the people’s commissariat and departments, on questions of supply of the 
army, was reduced to a minimum.”\textsuperscript{130} These procedures allowed the GKO to compare 
and adjust the specifics of their centralized planning with local authorities:

\begin{itemize}
\item \textsuperscript{127} S. Lieberman, “Crisis Management in the USSR: The Wartime System of Administration and 
Control.” in Linz, p.60.
\item \textsuperscript{128} Harrison, Soviet Planning in Peace and War, p.94.
\item \textsuperscript{129} Glantz, et. al., pp.377-383.
\item \textsuperscript{130} Lieberman, in Linz, p.61.
\end{itemize}
There were no GKO sessions in the usual sense (i.e. with a definite agenda, secretaries and minutes). The procedure for securing agreements with Gosplan, with commissariats and agencies on questions of supplying the army, including setting up new production, was simplified in the extreme.¹³¹

One week after the German attack, GKO issued its first wartime plan, the National Economy Mobilization Plan, which was put into effect for the duration of the third quarter of 1941. Although, as previously stated, the first six months of the Nazi-Soviet war were subject to economic disorganization, this plan increased Soviet armaments production by 26% through the redistribution of the supply of metal. The Plan also provided a priority-list for the allocation of raw materials to those involved in the construction of war plants, electrical power stations, railways, or the fuel, metallurgical and chemical industries. The Plan reduced the supply of resources and industrial equipment to the civil economy by 12% and redistributed the surplus material for war production. For example, of the available 22 000 metal cutting machine tools, 14 000 were allocated to Soviet government ministries whose enterprises produced ammunition, armaments, and aircraft.¹³² On August 16, 1941, a plan for the fourth quarter of 1941 and the first part of 1942 was instituted by GKO which specifically targeted the regions of the Volga, Urals, Western Siberia, Kazakhstan, and Central Asia, to accelerate the transformation of their local industries to war production. A 1 386 000 kilowatt generator was constructed to supply power, and raw materials worth 16

¹³¹ Harrison, Soviet Planning in Peace and War, p.95.
¹³² Khavin, p.35.
billion rubles, were allocated to these regions. As a result the following were built: 5 blast furnaces, 27 open-hearth furnaces, 5 coke batteries, 59 coal mines, and a blooming mill.\textsuperscript{133}

In January 1942, Gosplan received orders to coordinate the Soviet war economy and create individual departments to plan tank, aircraft, and artillery production. Gosplan soon had a department which controlled every Soviet factory involved in the production of weaponry. Gosplan also formulized plans for the supply of raw materials and manpower to a designated group of 120 major factories during each financial quarter of every year that the war continued. This guaranteed a minimum level of Soviet economic performance which in turn, formed the basis of all Soviet military planning.\textsuperscript{134} The procedural changes in economic planning, from improvisation to central planning, averted the collapse of the Soviet war effort and enabled the Soviet war economy to adjust to the unfolding war scenario so that it could effectively equip the Red Army. For example, during the first six months of the war when mere survival and defence against the Nazi onslaught was the Soviet concern, arms production had been the only goal of the Soviet war economy.

\textsuperscript{133} Voznesensky, p.36.
From Defence to Offence:

However in 1942, as the Red Army began to repel the Wehrmacht, a "healthy second place" of raw materials was reserved for basic war industries such as iron and steel manufacturing, electricity production and transportation. By May 1942, the Soviet economy had reached production parity with the German economy in artillery and mortars, by December 1942, there was parity in tanks and self-propelled guns, and by 1943 there was parity in aircraft and army strength. Voznesensky wrote that "in March 1942, war production in the eastern districts alone reached the production level of the entire territory of the USSR at the beginning of the Patriotic War". The gross output from all branches of Soviet industry rose 50% from January to December 1942, and the gross output of industry in 1943 was actually 17% higher than it had been in 1942. Voznesensky writes:

In order to perceive the significance of this rate of growth of industrial production, suffice it to recall that the average annual rate of increase in production amounted to 13% during the three pre-war years of the Third Five-Year Plan.

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135 ibid., p.36.
136 Harrison, Soviet Planning in Peace and War, p.110. In the first six months of 1942 machine gun and anti-tank gun production rose six fold and field artillery and mortar production rose eighty percent as tank production rose 130% (compared to June to December 1941). Great Patriotic War of the Soviet Union, p.117.
137 Voznesensky, p.39.
138 By 1943, Soviet production of many weapons actually exceeded demand, and so production levels for such items were reduced or leveled. An example of this is Field Artillery. W. Dunn, Kursk. (Westport, 1997) pp.32-33.
On January 29, 1943, Gosplan was directed by GKO to plan the economic reconstruction of liberated areas, with an emphasis on the repair and reconstruction of heavy industry. The re-conquest of territory by the Soviets was not as important as their ability to immediately amalgamate the industrial capability of these lands to aid the Soviet war economy. From 1942 to 1944, the production of over 6000 economic enterprises in the liberated areas of the USSR was added to the Soviet war economy. Total capital construction costs for repair and reconstruction totaled 77 billion rubles over this three year period. This provided the economic foundation for the huge and rapid offensive gains made by the Red Army between 1943 and 1945. Barges were built to allow transport upon the waters (which unlike roads or rails needed no repair) and by the end of 1943, waterway traffic had increased by 556 million ton-kilometres. “Bridge repairs were completed so quickly that German bombing attacks were of relatively little effect.”

139 Voznesensky, p.40.
141 In 1943, as the Red Army began to regain territory on its road to Berlin, GKO created “main administrations” for motor transport (glavnoe avtobitnoe upravlenie), and military roads (glavnoe дорожное управление) in addition to adding rail and medical units with supply echelons to Khrulev’s Rear Administration. In effect, Khrulev was responsible for the supply to the army of everything except weapons and ammunition. J. Erickson, Road to Berlin, (London, 1996) p.81.
144 Voznesensky p.85.
145 Uebe, p.84.
After 1943, the Soviet supply and rear units totaled one fifth of the Red Army’s field strength. \(^{146}\) Luftwaffe reports indicate that the Soviets repaired a section of track within twenty-four hours (sometimes three hours) after it was “supposedly destroyed”\(^ {147}\):

The effects of Luftwaffe rail interdiction attacks remained locally restricted and, what is more important, only temporary. This was so because the Soviets developed completely unexpected and astonishing capabilities in the repair of damaged rail routes… the Russians held large reserves of personnel and large supplies of repair material available along the routes, and this enabled them to repair within a surprisingly short time any damage done by attacking aircraft. \(^ {148}\)

However, it was the railways which provided the key to Soviet victories. \(^ {149}\) In 1943, Soviet industries produced 2 000 locomotives and 56 000 freight cars. \(^ {150}\) From January to March 1943, 6 600 kilometres of railway line were reconstructed in liberated territory for Soviet use; the total for 1943 being 19 000 kilometres and growing to 43 000 kilometres in 1944. \(^ {151}\) This obviously affected the quantity as well as the rate at which the Red Army could be supplied as it carried offensive operations westward. \(^ {152}\) Voznesensky writes that “in comparison with 1942, the average daily carloadings increased by 3000.” \(^ {153}\)

\(^ {146}\) Erickson, *Road to Berlin*, p.81.
\(^ {147}\) Uebe, p.85.
\(^ {148}\) Deichmann, pp.160,112.
\(^ {150}\) Dunn, *Kursk* p.20.
\(^ {152}\) "GKO columns" were established to use certain trains on constant basis with minimum stoppage time. Erickson, *Road to Stalingrad*, p.235.
In the liberated areas of the Western USSR a “rapid restoration of power for equipment needed for the Soviet war industry” occurred.\textsuperscript{154} Between 1943 and 1944 the following were renewed: electrical stations totaling 1 million kilowatts of power, 1,047 coal mines with an annual productivity of 44 million tons, 13 blast furnaces with an annual production of 2.3 million tons of pig iron, 70 blast furnaces with an annual capacity of 2.8 million tons of steel, and 28 rolling mills capable of 1.7 million tons of output per year.\textsuperscript{155} After its liberation in January 1942, the Moscow Coal Basin which had ceased production since November 1941, began to yield 590 tons of coal a day. This was raised to 22,000 tons per day in May 1942, and 35,000 tons per day in October 1942. The latter figure being close to the pre-war output of this basin, was eventually superseded as production steadily increased during 1943.\textsuperscript{156} When the Donbas was liberated by Soviet forces in 1943, its coal production was raised from zero to 35,000 tons a day, and by the end of the war it reached 96,000 tons per day.\textsuperscript{157}

In Leningrad, those enterprises which could not be evacuated continued to supply the Leningrad front as part of the Soviet economy throughout the war.\textsuperscript{158} In 1942, Leningrad’s production totaled 1.4 billion rubles, in 1943 it rose to 2.5 billion

\textsuperscript{153} Voznesensky, p.85.  
\textsuperscript{154} Uebe, p.83.  
\textsuperscript{155} Erickson, \textit{The Road to Stalingrad}, p.344.  
\textsuperscript{156} Voznesensky, pp.48,51.  
\textsuperscript{157} ibid., p.52. In 1943 the Kuznetsk Basin produced 26 million tons of coal while the Karaganda Basin produced 9.7 million tons. The total output of the Donets Basin and the Moscow coal mines (new and
rubles, and in 1944 it accounted for 3.6 billion rubles.\textsuperscript{159} By the spring of 1944, collective farms in the liberated areas had sown 16 900 000 hectares of land with crops. Crop yields were further aided by the allocation of 394 tractors in 1943, and 1 702 more in 1944.\textsuperscript{160} Additionally, in 1943: 744 000 beef and dairy cattle, 818 000 sheep and goats, 55 000 pigs, 65 000 horses, and 417 000 fowl were delivered to liberated Soviet areas.\textsuperscript{161} Another big achievement was the construction of housing for both the local population in the liberated areas and workers involved in reconstruction, who otherwise were residing in earth dug-outs or caves. Between 1943 and 1944, 839 000 homes in rural areas and 12 777 000 square metres of housing space in urban localities were constructed.\textsuperscript{162}

\textsuperscript{158} Uebe, p.83.
\textsuperscript{159} Voznesensky, p.51.
\textsuperscript{160} It should be noted that I use the word "allocated" because the majority of Soviet tractors were employed by the Red Army for various hauling tasks.
\textsuperscript{161} Werth, Russia At War, p.255.\textsuperscript{.}
Economic Crutch, Lend Lease:

Within this section something should be briefly mentioned about the effect of Lend-Lease ($11 billion from the U.S.A., $1.5 billion from Great Britain) with reference to Soviet wartime planning.\(^\text{163}\) Although the biggest influence of Lend-Lease was the notion of allied solidarity with the peoples of the USSR, food was undoubtedly the most valuable and most appreciated Lend-Lease supply.\(^\text{164}\) It is estimated that the total American rations supplied to the USSR could have provided one pound per day of food to six million soldiers for the duration of the Great Patriotic War.\(^\text{165}\) Lend-Lease food aid represented 3% of Soviet grain consumption, 20% of Soviet meat consumption, 50% of Soviet sugar and vegetable consumption, and nearly 100% of Soviet fat consumption during the war. With regard to the last figure, Lend-Lease aid increased the caloric intake of Soviet citizens by 50%.\(^\text{166}\) However, it is interesting to note that the majority of grain and meat fed to the Soviet population was self supplied. As for equipment, the Soviets quote the Anglo-American contribution of 9000 tanks and 12 000 planes as representing only 4% of total Soviet wartime production.\(^\text{167}\) Other appreciated items included in Lend-Lease shipments were the: 34 million uniforms, 14.5 million pairs of boots, 4.2 million tons of food, 11,800 railroad locomotives and

\(^{162}\) Ibid.
\(^{165}\) van Tuyll, p.117.
\(^{166}\) Dunn, The Soviet Economy and the Red Army. p.57.
cars, 409,000 cargo truck, and 47,000 jeeps. Nevertheless, it is the timing and the type of aid which was sent to the Soviet Union which remains the key to understanding Lend-Lease's role.

The majority of allied aircraft supplied by Lend-Lease were used in a ground-attack role because they could not dogfight or perform interceptor roles as effectively as their Soviet MiG or Yak counterparts. Consequently, non-Soviet aircraft were also used as trainers, in defensive roles, or to attack shipping. The American P-63 Kingcobra, a ground-attack fighter, had the notorious problem of losing its tail in flight. Nonetheless, it was one of the most substantial types of aircraft which was supplied to the Soviet Union via Lend-Lease. The Red Army was also sent several thousand tanks with narrow treads and thin armour which were unsuitable for use on the Eastern Front. Allied tanks had to be systematically re-armed and modified after their arrival in the USSR, for example, their 40mm guns being replaced with the Soviet 76 mm

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168 "the Allies bought the German defeat with Russian blood and paid in Spam" (Moynahan, pp.127-129.) and Glantz et. al., p.150. Also see, Erickson, Road to Berlin, p.81. The author says that by mid-1943, 183 000 trucks and jeeps were delivered to the USSR. and W. Dunn, Kursk, p.8.
169 Ehrenburg comments that n April 15, 1942 that British tanks were a minor component which proved helpful but that "a tank is not a girl; tanks are good when there are many of them." Ehrenburg, The Tempering of Russia, p.207.
170 van Tuyll, pp.114-115.
171 ibid., p.12.
172 ibid., p.50.
There was the additional problem that each kind of allied tank required a separate stock of spare parts, which is why the Soviets insisted that only a single type of tank should be provided in Lend-Lease shipments.\textsuperscript{174}

Most non-Soviet machinery was also gas-powered and therefore, more likely to explode when hit in comparison to their Soviet counterparts which were diesel operated. This was true of the M3A1 General Lee and the M3A5 General Grant tanks which constituted American Lend-Lease supplies until 1943. In a letter to Roosevelt dated July 18, 1942, Stalin stated:

I consider it my duty to warn you that... U.S. tanks catch fire very easily.... The reason is that the high-grade gasoline used forms inside the tank a thick layer of highly inflammable fumes. German tanks also use gasoline, but of low grade which yields smaller quantities of fumes, hence, they are more fire proof. Our experts think that the diesel makes the best tank motor.\textsuperscript{175}

This explains why the Germans nick-named allied tanks "Tommy-Burners".\textsuperscript{176} In Soviet service they earned the nickname "Coffin For Seven Comrades".\textsuperscript{177} The Sherman tank also consumed more fuel than Soviet tanks.\textsuperscript{178} Consequently, most Allied tanks, especially the American Lee and Grant or the British Matilda II and the Valentine, were

\textsuperscript{173} British Valentine and Matilda tanks had turrets which were too small to fit a gun larger than 40 mm. Glantz, et. al., p.150.
\textsuperscript{174} Werth, \textit{Russia at War}, pp.566-570.
\textsuperscript{175} Correspondence between the Chairman of the Council of Ministers and the USSR and the Presidents of the USA and the Prime Ministers of Great Britain during the Great Patriotic War of 1941-1945, Vol. 2, (Moscow, 1957) p.30.
\textsuperscript{176} van Tuyl, p.53.
\textsuperscript{177} Dunn, \textit{The Soviet Economy and the Red Army}, p.73. Author also notes that the majority of "Soviet" tanks destroyed by the Germans during the largest tank-engagement of the war (Kursk), were Lend-Lease. Dunn, \textit{Kursk}, pp.72,93,167.
used as Soviet trainers or for rear-area security rather than in assault roles. Sherman tanks in Soviet service also had to be “re-shoed” with rubber treads (cleats of barbed wire were also attached to the treads) to reduce the noise of their movement and increase their service life. This procedure took two hours per tank to accomplish.

Nevertheless, Shermans still routinely flipped over and skidded, and were known as “easy sliders” and “quick over-turners” in Soviet service. Sherman tanks in Soviet service also regularly broke down or needed constant servicing. For example, the Soviet 5th Mechanized Corps lost 75 % of its foreign made tanks within one hour during the Jassy-Kishinev operation in August 1944. The Sherman tank had a complex track system which routinely cracked because its rubber road wheels could not withstand rough terrain or extremes of temperature. Soviet tankniki developed a way of ‘cooling down’ their Sherman tanks by urinating on the treads. However, this did not stop the engines from overheating. There is also reason to believe that much of the Anglo-American aid which was shipped via the Persian Gulf, was refurbished. This

178 Glantz et. al., p.151.
179 van Tuyll, p.55.
180 D. Loza, Commanding the Red Army’s Sherman Tanks, (Lincoln, 1996) p.6. Again, “the well-dressed tracks” (its good manufacturing) was a deficiency for the practical purposes of warfare on the Eastern Front.
181 Loza, p.7.
182 ibid., p.6.
183 ibid., p.50.
184 ibid., pp.51-52.
information is derived from a document within the British archives titled Public Record Office, Tank Return, Middle East.\textsuperscript{185}

Furthermore, it should be noted that Lend-Lease aid to the Soviets was only provided in useful (in substantial and in regular shipments) quantity during 1944. Of the total Lend-Lease aid to the Soviet Union: 6.3% was received in 1941, 19.8% by June 1942, 26.4% by August 1943, and 30% by August 1944.\textsuperscript{186} Not only the quantity of aid but the type of aid which was needed also arrived late in the war; rail cars and locomotives only made an appearance as part of Lend-Lease shipments in 1944. There were also quarter to quarter (fiscal divisions of a year) and monthly fluctuations concerning the quantity and quality of aid being delivered to the USSR.\textsuperscript{187} A three month delay between the shipping date and its arrival was not unusual and in the case of raw materials or complex machinery, the transfer time from requisitioner to receiver was substantially longer.\textsuperscript{188}

Lend-Lease aid was directly proportional to Soviet production and the front situation:

\textsuperscript{185} Glantz et. al., p.151. and Dunn, Kurk, p.93.
\textsuperscript{186} Nove, p.51. In 1944, Lend-Lease fell in comparison with 1943. However, in 1944, 65% of total German forces were destroyed as the Soviets consumed 4 million tons of fuel which represents 1/3 the fraction of total Soviet war time fuel consumption. Erickson, Road to Berlin, pp.405,423.
\textsuperscript{187} In 1943 the Armoured Forces Administration told Mikoyan that Lend-Lease was providing the Soviet Armed Forces with "no great quantity" of tanks and that the majority of those being sent were light tanks. Erickson, Road to Berlin, p.83.
As Lend-Lease aid grew, so did the USSR's capacity to meet its own military needs. The reverse is also true: Lend-Lease imports in 1941-42 were comparatively limited but Soviet production was barely adequate, if that.189

The rate of attrition of the Soviet armed forces was not less during the defensive period than during the offensive period of the war. Even though Soviet loss rates were enormous between June to December 1941, they actually rose during the Moscow counter-offensive and "for artillery and tank forces this was the heaviest period of the war."190 After the spring of 1942, artillery loss rates began to steadily decline, however tank losses still fluctuated around 40% of total front-line forces until the end of 1943. The air force faced its highest losses, 80% per month, during the "Battle of the Skies" in the summer of 1942:

These massive losses might have proved disastrous except that the Soviet aircraft industry, wisely limited its aircraft construction program to the models required for the defence and support of ground operations, succeeded in producing a large number or reliable, if not outstanding, aircraft.191

In June 1944, Soviet monthly losses still amounted to: 2000 tanks, 3000 aircraft, and 10,000 artillery mortars.192 Soviet industry not only had to replace this loss but to produce reserve equipment. The fact that both these tasks were accomplished is another important reason behind the Soviet victory.193

188 Nove, p.51
189 ibid., p.50.
191 Uebe, p.7.
193 Barber, et al., p.182. The ability of Soviet industry and quality of its output can be gauged by Stalin's recommendation to the British and Americans, to send more trucks than tanks. Stalin was more annoyed by the disruption and delay of food and industrial supplies than any other Lend-Lease. Erickson, *Road to Berlin*, p.84.
Standardization of Industry:

Soviet weaponry was produced with the least amount of material and labour of any nation during the Second World War.\textsuperscript{194} Cost effective measures produced the rough looking finish of the T-34, however, aesthetic appearance received no credits on the battlefield. During the entire course of the war the cost of Soviet weaponry production steadily decreased. From 1941 to 1943, the labour needed to produce: a 76 mm regimental gun was reduced by 31\%, a 152 mm howitzer was reduced by 41\%, a T-34 tank was reduced by 51\%, and the 76 mm divisional gun was reduced by 73\%. The most important Soviet weapon, the T-34 required 1030 hours for its manufacture in 1942, but by 1944 it could be replicated in 475 hours.\textsuperscript{195} In addition to maximizing production, the Soviets also maximized the usage of their weaponry. The mounting of a 76 mm artillery piece onto the chassis of a tracked vehicle not only allowed the artillery units greater mobility and effectiveness, but also removed the need for horses and trucks for transport purposes. In 1942, the Soviet Union produced 12.5 million tons of steel whereas Germany's output was 30 million tons. However, only 8 million tons of German steel production in 1942 was actually used in military production.\textsuperscript{196} From its low point in 1941, Soviet tank production grew to twice that of Germany by the end of 1942, and rose to three times more by October 1943.\textsuperscript{197} In 1942 the diesel engines of

\textsuperscript{194} "The Industrial Equipment of the Russian Soldier was good to excellent in quality." Uebe, p.10.
\textsuperscript{195} Erickson, Road to Berlin, p.84.
\textsuperscript{196} Erickson, The Road to Stalingrad p.355.
\textsuperscript{197} Overy, Why the Allies Won, p.211.
Soviet tanks were also improved which enabled the radius of action to rise by a factor of three.\footnote{Overy, *Why the Allies Won*, p.212.}

Another important ingredient of the Soviet economic system was “planned obsolescence”. This was the consideration of planners in regard to the average life-span of weapons in battle. Soviet tank engines seldom lasted longer than a few hundred hours. However, the average life-span of a tank on the Eastern front whether it was a hand-crafted Tiger, a Matilda II, a Sherman, or a T-34, was always six months. Cutting the tolerance of engine-wear reduced the production time per unit of Soviet manufacturing. Furthermore, new weaponry designs made use of the existing features of its predecessors in order to simplify production. Hence, the Soviets began and ended the war with the same rifles, pistols, machine guns, and mortars. Soviet self-propelled guns were built upon chassis of existing tanks while most heavy tanks were improvements on the KV (Kliment Voroshilov) design frame.\footnote{Dunn, *The Soviet Economy and the Red Army*, pp.96-97.} In fact, most Soviet labourers manufactured the same part throughout the course of the Great Patriotic War, their skill and speed correspondingly rose making overall production more efficient.\footnote{Ibid., p.97.} Additionally, the concept of mass production and “long runs” served to break down a complex task into many semi-skilled or unskilled jobs which an individual could be trained to perform in minutes. A practical use of such techniques was that women or
young boys who did not have great physical strength, could replace men within Soviet factories.

The other factor which allowed for continued Soviet armed resistance and eventually paved the way for offensive operations, was that units of mechanics with trucks full spare parts always accompanied Soviet armoured columns. These personnel were as valuable as the new tanks being produced in the rear areas because they enabled Soviet combat efficiency to operate at its maximum during any battle. For example, General Rodmistrov's 5th Guards lost 400 tanks within two days of heavy fighting during the Battle of Kursk. However, within hours 112 of those damaged tanks had been repaired and were once again made operational. The important thing to note is that most mechanical work was completed on the front lines. The Wehrmacht however, had to send most of their damaged equipment roughly 2 000 miles to the Reich.
Conclusion:

The resurrection of the Soviet economy was achieved by the efficiency with which evacuated industries were restarted and also through the expert management and administration of Soviet economic planners. The central control of the Soviet economy allowed for the entire mobilization of a country in the spirit of 'total war'. Limited labour and resources were maximized by Soviet economic planners to provide the Red Army with the means to wage war. Unnecessary bureaucracy was eliminated so that an order from Moscow was transmitted by the person in charge (in many cases Stalin himself) to the person it was intended for (head of a factory). Furthermore, Moscow regularly revised its dictates in accordance with the changing situation at the front so that industry was producing what was required when it was required. The simplicity of Soviet manufacturing techniques and assembly line production were also responsible for the successful military campaigns of the Red Army:

It is true that the USSR produced the bulk of what was used. Furthermore, to the great credit of designers and everyone responsible for manufacturing, the quality of a great deal of Soviet equipment was very good, the tanks being especially effective...It is quite beyond dispute that the vast majority of the best aircraft, tanks and guns were of Soviet manufacture.\(^\text{202}\)

An effective logistics capability guaranteed that front line troops would receive finished products without unnecessary complications. The economic recovery of reclaimed Soviet territory was also fundamental in propelling the Red Army outside Soviet

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\(^{201}\) Overy, *Why the Allies Won*. p.212.

\(^{202}\) Nove, p.275.
borders towards Berlin. Thus, with the Soviet economy empowered, the Red Army was better equipped to achieve military victory.
Za Rodina!\textsuperscript{203} The Soviet Home Front

Introduction:

The 'home front' remains a neglected aspect of military historiography, nevertheless, it is not only the mobilization of a population for the armed forces which wins battles, but also the mobilization of the population for work in the war economy. The most serious limiting factor of all war economies is labour. The Soviet war economy is unique in the annals of military history because it represents the implementation of 'total war'. This is perhaps due to the fact that the strength and momentum of the initial Nazi attack caused a calamity which physically affected the majority of the Soviet population in one way or another. The Soviet government's second most urgent task after the evacuation, was the maximization of labour. The role of women in this endeavour was critical and provided the Soviet economy with a huge advantage compared to its German antagonist. Patriotic sentimentality accounted for a great deal of the relative efficiency with which the Soviet government mobilized the population. The subject of this chapter is the human face of military and economic statistics, facts and figures.

\textsuperscript{203} One of the Soviet war time slogans... "For the Motherland!" (homeland)
The Mobilization of Labour:

On June 30, 1941, the Soviet Manpower Committee issued a directive for the compulsory training and re-direction of labour. By that time (June 22-30) the Soviets had already mobilized 5.3 million reservists (aged 23-36 years old) who had previous military training and between July 1 to December 1, 1941, 3.5 million additional Soviet recruits found their way into the Red Army.\(^{204}\) Local cells of the CPSU were fundamental in the organization and mobilization of labour for the armed forces and the war economy.\(^{205}\) By end of June 1941, the CPSU and the Komsomol had mobilized 95,000 of its members. The Soviet Academy of Sciences was also mobilized on January 23, 1941, many of its members conducting surveying operations in Soviet Asia, the extraction of raw materials, and the construction of bomb shelters. In Magnitogorsk, engineers began improving armoured plates for tanks, and upgrading weapons delivery systems.\(^{206}\) From the University of Leningrad, 250,000 students, post-graduates and professors volunteered for service, many filling the ranks of the home guard which numbered 110,000 by July 10, 1941.\(^{207}\) On July 13, 1941, workers at the Kirov Plant in Leningrad were trained to operate the tanks which they were beginning to manufacture. As the front moved closer to Leningrad, its citizens were also mobilized to clean up damage after Luftwaffe air-raids, and to build 900 km of defense trenches and other

\(^{205}\) Great Patriotic War of the Soviet Union, pp.57-58.
\(^{206}\) Erickson, Road to Berlin, pp.77-78.
fortifications. In general, the massive recruiting of Soviet civilians allowed the Red
Army to concentrate on fighting rather than the building of defence fortifications in front
line areas.

From June to December 1941, 69 000 people were transferred from food and
light industries into heavy industry and construction. An additional 59 000 people were
transferred to work within arms producing industries. Twenty government
commissariats provided 50 000 people for factory assignments, the industrial
commissariat losing half of its total staff. For example, the Manpower Committee
discovered 1 000 skilled metal workers within the ranks of the Industrial Commerce
Department. Many more skilled workers were found to be employed in the cafes and
restaurants of the capital. In total, more than 11 000 people with high labour skills were
recruited from all state and economic agencies. By 1942, the Manpower Committee
had re-directed 750 000 people from their previous employment, into a sector of the
Soviet war economy. This number exponentially rose by a million each year, reaching a
total of 12 million newly trained or redirected people by 1945. This labour was
utilized in five different environments: within defense plants as war equipment

207 A most famous example of the intelligentsia who remained in Leningrad, is Dmitri Schoshtakovitch
who completed and conducted his Symphony # 7 Leningrad. There were also 150 writers who
volunteered for duties within Leningrad by July 1941.
208 Kislityn, et. al., pp.33-39.
209 Glantz, et. al., p.63. On September 28, 1942, General Chuikov (Stalingrad) received Order # 171 to
bring "in the civilian population to help in the work (of building obstacles and dismantling buildings
and tram lines) through the local organizations" Chuikov, p.170.
manufacturers and assemblers, in heavy industry as engineers and industrial plant staff, in construction to build or rebuild defense fortifications and evacuated plants, in transport and in agriculture.\(^{212}\)

From 1940 to 1942, the total number of people employed in the Soviet economy fell from 31.2 to 18.4 million, the drop in industry being from 11 to 7.2 million people.\(^{213}\) Thereafter, limits of labour mobilization were planned and enforced to ensure that no further labour shortages constrained Soviet productivity. However, the Soviet war economy was near collapse by the end of 1941 because too many skilled labourers had volunteered or been conscripted into the armed forces, leaving industry with a dire shortage of labour.\(^{214}\) This was corrected by the time of Zhukov’s counter-offensive at Moscow, and although there were fewer citizens defending the capital, Soviet industry was able to provide them with a constant output of arms and ammunition. By the end of 1942, the Red Army had nearly reached its wartime ceiling of 11.6 million people.\(^{215}\) Skilled workers were excused from military service, and many thousand soldiers were withdrawn from the armed services and redirected to Soviet industry. The Soviet labour shortage was most acute during the first few months of

\(^{210}\) Barber, et. al., p.96.  
\(^{211}\) ibid., p.144.  
\(^{212}\) ibid., p.149.  
\(^{213}\) Zaleski, p.311.  
\(^{214}\) Barber, et. al., p.166.  
\(^{215}\) Harrison, Soviet Planning in Peace and War, p.147. It is also important to note that Soviet medical procedures were improving throughout the war, which eased manpower requirements. For example, of
1942, when: the People’s Commissariat of Munitions was short by 35 000 workers, the Commissariat of the Tank Industry was short by 45 000 workers, the Commissariat of Armaments was short by 64 000 workers, the Commissariat of Aircraft Manufacturing was short by 215 000 people and the Commissariat of Heavy Machine Building was short by 50 000 people. Furthermore, half of these vacancies required the employment of skilled labour.216

Subsequently on February 13, 1942, GKO issued an order called “On Mobilization Of Able-Bodied Town Dwellers For Work In Industry And Construction For The Duration Of Hostilities”.217 By this order the entire urban population (including women) were compelled to work in Soviet defense industries until further notification.218 The only exemptions were for persons under some form of educational or industrial training or those involved in child care.219 To allow for all able bodied members (women and the elderly) of the Soviet population to aid in these endeavors, the Soviet government increased the number of kindergartens in these regions from 683 000 to 1 210 000 during the war years.220 This allowed 800 000 housewives, school students, and pensioners, to volunteer for employment in the war economy between

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the 5.5 million Soviet soldiers hospitalized in 1943, 73 % of this total was returned to active duty within 60 days. The net loss for 1943 was thus, 800 000. Dunn, Kursk, p.21.
216 Zaleski, p.311.
217 Davies, et. al., p.86. Entire Soviet villages were routinely mobilized to move army supplies so that soldiers would have a lighter load, and in order to overcome logistics problems due to a lack of rolling stock trucks and horses. Dunn, Kursk, p.8.
218 All males between the ages of 16 to 55, and females 16 to 45 years of age. Wright, p.59.
June to December 1941. Hence, “it is hardly an exaggeration to picture the typical Soviet work-place collective in wartime as schoolchildren, grandparents, mothers, and aunts.”221 The breakdown of the labour force in industry (1941-1945) was: 50 % women, 25 % adult male, 8.5 % children, and 16.5 % being the elderly.222 The mobilization of the entire male rural population who were not already working in industry was issued by government decree on January 9, 1943.223

The Soviet government maintained workers education centres and institutions for higher learning during the war to sustain reserve of qualified economic, engineering, and administrative people. The Soviet government also allowed university students exemption from military service.224 The government also sponsored the re-training of invalids for work. Furthermore, each year a minimum number of workers were re-trained as skilled specialists. By 1942, 80% of all industrial workers were taking courses to improve their skills and this number increased by 131% in 1945.225 Voznesensky writes that “the increased productivity of labour made it possible to reduce the expenditure of labour per unit of output, primarily in the war industry.”226 Some examples of this economic phenomenon follow, and in each case the production

220 Voznesensky, p.93.
221 Barber, et. al., p.148
223 Zaleski, p.312.
224 Voznesensky, pp.95-96.
225 Zaleski, p.312.
of the said product increased despite the reduction of labour and the man-hours required per unit: Man-hours per IL-4 plane reduced from 20 000 to 12 500 hours, IL-2 Shturmovik from 9500 to 5900, PE-2 bomber from 25 300 to 13 200, 152mm howitzer from 4500 to 2400, 76mm regimental gun from 1200 to 800, divisional gun from 2200 to 600, KV-1 and KV-2 tanks from 14 600 to 7 200, large-calibre machine guns from 642 to 329, and rifles from 12 to 9. 227

Soviet factories split each day of the week into three, eight hour shifts, or two twelve hour shifts. This raised each worker's productivity by 7 % per hour, resulting in a net increase of 30 % output per worker, per shift from 1940 to 1942. 228 Additionally, all Soviet factory workers were required to perform between one to three hours of overtime work per day. 229 On October 4, 1941, Stalin revised his former Order of the Day (the "no treason order") which was meant to have enforced military discipline in the work place. For small labour infractions plant managers subjected the transgressors to harsh punishment in fear that a failure to do so would draw suspicion from higher authorities about their loyalty to the Soviet regime. 230 The decision was taken by GKO after its consultation with numerous plant managers indicated that such penalties led to a drop in industrial productivity. This is because a worker who, for instance, was late

226 Voznesensky, p.95.
227 Ibid.
228 Ibid., p.42.
229 Barbar, et. al., p.117.
230 Erickson, Road to Stalingrad, p.227.
by a few minutes might be sent home for the day without pay. However, that worker’s absence affected the entire plant’s production yield (especially assembly line work). Furthermore, harsh labour penalties were demoralizing for the entire staff. Similarly, many other harsh labour laws and penalties were also withdrawn.  

During the industrialization period of the 1930s many Soviet plant managers overlooked the lax and undisciplined behavior of their employees in order to maintain good employer-employee relationship. Since plant managers were held accountable for low production quotas, they hired more staff and asked for more raw materials to compensate for poor output levels. Hence, during the war, the productivity of certain plants increased solely as a result of the change in worker mentality. The Soviet Union also used the services of 1.5 million Soviet prisoners, who expressed popular support for the war effort, since almost all the inmates knew a relative or loved one who was fighting or on the home front. Aleksandr Solzhenitsyn wrote that the slogans within the Gulag such as “Coal for Leningrad” and “Mortar Shells for the Troops” were very effective.

232 Ibid., p.159.
233 Ibid., p.170.
Mothers for the Motherland:

The utilization of female labour was an astounding and unique achievement for both the Soviet war effort and its female participants. One may say that the USSR already possessed an approximate fifty percent advantage in available labour because as previously discussed, the utilization of female labour in the German war economy was negligible. A total of 800,000 Soviet women were mobilized for front-line service during the Great Patriotic War. They served as: infantry, cooks, medics, field-surgeons, snipers, machine-gunners, gun layers, tank drivers and commanders, bomber and fighter pilots, radio operators, saboteurs, scouts, mortar crews, and parachutists. In 1942, whatever legal restrictions remained regarding the enlistment of women in front-line duties, were swept aside. Soviet women had been serving prior to this date but the Soviet government was somewhat reluctant to openly admit this fact. However, this changed once the role of women actively participating in the military struggle was identified with patriotism rather than the abominable state of the Motherland’s defenses. In fact, the total number of women serving in the military was so great that they were given the privilege of joining entire female formations such as: 1st Independent Woman’s Reserve Rifle Regiment, 588th Woman’s Night Light Bomber Regiment (formally 46th Guards...note that the “Guards” designation is an elite classification), 587th Woman’s Day Bomber Regiment (formerly 125th Guards), and 586th Woman’s

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234 Dunn, Kursk p.22.
Air Defense Fighter Regiment. Among these regiments, the 588th was a distinguished regiment which flew 23,672 sorties, twenty-three of its pilots being honoured as Hero of the Soviet Union (highest Soviet distinction comparable to American Congressional Medal of Honour).

The Komsomol was instrumental in the task of mobilizing Soviet labour. It provided the war economy and the armed forces with women volunteers and recruits over the course of 75 separate mobilizations. There were an additional five mobilizations of full-status women members of the Communist Party. The first result of universal (female) military training produced 222,000 female mortar crews, machine gunners, and radio operators. In Spring 1942, the Komsomol drafted 100,000 young women between the ages of 19 and 25 years of age for the Air Defense Command (PVO), a second mobilization followed in October 1942. By January 1943, 70,029 (10%) of the PVO were woman and by the end of the war this figure rose to 200,000. An additional 41,011 garrisoned PVO’s anti-aircraft batteries. Many thousands of Soviet women also volunteered for the People’s Militia (Narodnoe Opolchenie), which

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236 The U-2 and Po-2 biplanes flown by Soviet women were referred to by German troops as “sewing machines”. This quickly gave way to the term “night witches” as more Wehrmacht troops experienced the effectiveness of female, Soviet precision bombing. Muller, p.130.
238 A. Noggle, A Dance With Death: Soviet Airwomen in World War II. (College Station, 1994) pp.4,16,94. Rudel reports, “... our crews always say: ‘we’ve a date with the flak girls to-day.’ This is in no way derogatory, for all of us who have already been there know how accurately they fire.” Rudel, p.727.
was basically a civilian army. In July 1941, women made up 18,884 of 70,464 volunteers.

By 1944, 26,000 Soviet women served as Operative Partisans, those enlisted military personnel who were deliberately placed behind enemy lines (that is, not the local and spontaneous resistance fighters). Partisan training schools yielded 1,262 women as radio-operators and parachutists for the specific duty of infiltration behind enemy lines. In general, Soviet women accounted for 25% of the composition of individual partisan units. There were also 100,000 women who served in various roles within the communist underground movement. This was an organization which functioned as a representative of Soviet power behind enemy lines, providing the occupied territories with a vital link to the rest of the country and its Soviet central command. Women volunteers who possessed medical skills were immediately transferred to front line assignments where: 41% of all doctors, 43% of all field surgeons, 43% of all medical assistants, and 100% of the nurses were female. The occupation of battlefield nurses was so hazardous that “losses among the girl and women medics serving with the rifle battalions were second only to the fighting troops themselves.” Their efforts were

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239 The importance and courage of women incendiary-extinguishers, in Moscow, is commented upon by Caldwell, pp.114-118.
240 Garrard, et. al., pp.59-60.
242 Garrard et. al., p.52.
243 ibid., p.61.
244 ibid., p.62.
beneficial to the Soviet war economy because every year during the Nazi-Soviet war 5 million people were nursed back to strength.²⁴⁵

Besides the military, countless other Soviet women served their nation but as "fighters in overalls".²⁴⁶ As John Erickson writes, in the war economy of the USSR "manpower equaled womanpower".²⁴⁷ In the Kirov Plant in Leningrad, 500 housewives volunteered to replace their husbands who had gone off to fight in June, and by August 1941, women made up 90% of the work force.²⁴⁸ Similar decisions were made by housewives in Moscow, 374,000 of whom took up vacant factory jobs while others replaced their husbands as miners or at the coal-face with pneumatic drills in hand.²⁴⁹ Women filled posts in which they had non-existent representation before the war. From 1940 to 1942, the role of Soviet women in the national economy rose from 38% to 53%. By the end of 1942 (from pre-war 0-9%) women made up: 33% of steam engine operators, 44% compressor operators, 27% of stokers, 33% metal turners, 31% of welders, 32% of molders by hand, 39% of molders by machine, 12% of fitters, 50% of

²⁴⁵ Fugate, et. al., p.347.
²⁴⁶ Garrard, et. al., p.50.
²⁴⁷ Erickson, The Road to Stalingrad, p.201.
²⁴⁸ Wettlin, pp.153-154. Leningrad women who worked to build defense fortifications wrote notes and left them in the structures for soldiers to read: "Our dear son! Our dear defender and friend! We've dug this trench for you, so don't let the enemy break through to Leningrad. This is my behest. I know you don't know me, but take my letter. Your own mother would tell you to do the same as I'm telling you: smash the Nazi, son." Kisilitsyn, et. al., p.39.
²⁴⁹ Garrard et, al., p.55.
forge, hammer, and die-press operators, 50% of electricians employed in electric substations, and 40% of all loaders.\textsuperscript{250}

In 1942, 12% of Soviet employment in industry consisted of females and those over fifty years of age. At the end of that year, 165 200 Soviet women had been trained as skilled railway workers who served on track gangs, as mechanics, station staff, and electricians. There was also the especially dangerous work of “flying columns” which were, supply trains drivers to the front lines under constant harassment by Wehrmacht artillery and the Luftwaffe.\textsuperscript{251} By 1944, women made up 50% of the Soviet labour force who were employed in industry and 36% of those employed in construction work.\textsuperscript{252} Agriculture was another field which saw a dramatic conquest by Soviet women, their percentage in the work force rising from 40% in 1940 to 91.7% in 1945. For example 81% of all tractor drivers in 1944 were women, although they had only represented 4% of that labour force in 1940.

\textsuperscript{250} Voznesensky, p.92.
\textsuperscript{251} Garrard, et. al., p.55.
\textsuperscript{252} Erickson, Road to Berlin, p.404.
Labour as Patriotism:

Cash incentives for workers who predicted higher yields were offered. However, the Soviet economy was so deeply impoverished that money lost its worth during the war in favour of a barter system. Incentives of extra rations or some consumer products were preferred by most. Nevertheless, incentives as such played a negligible role in the Soviet war economy because the population was aware of the necessity to endure and wage war:

Soviet people saw that Germany was engaged in a war of extermination against them; working for Germany's defeat was seen as bringing its own reward, not requiring further coercive or economic levers to be applied.253

By far the most effective production booster was morale and patriotic feeling. Civilian populations near front line not only provided their services willing in building defence installations, but also by giving blood. In the Blood Transfusion Stations which were set up near Stalingrad one could find “women who were donating for the fifth, sixth, eighth time.”254 In cities where it was not possible to evacuate the civilian population (or where the procedure was not undertaken), local industries were kept functioning. For example, despite the dismantling and evacuation of many of Leningrad's industries and people, that city still managed to produce 3 million artillery shells by December

253 Barber, et al., p.176.
254 Wettlin, pp.230-231. Donors were entitled to two glasses of tea and milk and as much bread as they wanted. Donors were also issued with a certificate entitling them to higher rations. This ensured that donors could continue their work in industry and it encouraged more donations.
1941. It is noteworthy that the majority of these were sent to aid the Moscow counter
offensive.²⁵⁵

The *Stakhanovite* movement of ‘over-producers’ which started in the 1930s
continued throughout the war. F. Bukin of the Gorky Engineering factory for example,
led the Two Hundreders, workers who had produced twice the amount of a normal
shift’s work. Very soon there were Three-Hundreders, Four-Hundreders, and
Thousanders.²⁵⁶ Such movements began as early as August 1941, the slogans on the
home walls reading “work not just for yourself but also for your comrade who has gone
to the front”.²⁵⁷ D. Bosyi, a Thousander who led a group of milling-machine operators,
was actually sent to various factories nation-wide to raise morale and production. In
Nizhni Tagi for instance, there were 107 Thouands by April 1942, three months after
Bosyi had arrived. On February 23, 1942, in commemoration of the twenty-fourth
anniversary of the Red Army, Bosyi himself produced 1480% of his regular shift. His
own record kept rising, fifteen times, seventeen times, until on May 1, 1942, Bosyi
reached thirty-seven times his norm. This was superseded yet again in 1943, by a
record shift of sixty-two times normal.²⁵⁸

²⁵⁵ Erickson, *Road to Stalingrad*, p.237.
²⁵⁶ Barber et. al., p.174.
²⁵⁷ Ibid.
²⁵⁸ Ibid.
With even a handful of such workers in each Soviet factory it is not hard to imagine the feats of production which were achieved and which literally manufactured the victory of the USSR over Germany. Far from being a Soviet propaganda ploy or the efforts of a single ‘superman’, the work of such people (the overproducers) effectively raised the productivity and work-spirit of entire industrial plants. By 1944, there was a 30% increase in productivity per worker and the average industrial worker’s productivity was 42% above the pre-war level. By 1944, the monthly output of Soviet war industries had quadrupled from their 1940 figures. Each month the Red forces could count on receiving: 3400 aircraft, 1800 fighting vehicles, 11000 guns and mortars, 2000000 rifles, 19 million shells, mines, and bombs, and 500 million cartridges (for small arms).

259 It should be noted that Stakhanovites were generally distrusted and shunned by normal workers prior to the outbreak of war. Stakhanovites often disrupted production with their over-zealousness, which also earned them a bad reputation with other workers as ‘political types.’
260 Harrison, Soviet Planning in Peace and War, p.141.
261 Barber, et. al., p.183.
Conclusion:

Many authors have commented that the tradition of Russian ‘communalism’ (peasants) and the tradition of Soviet communism prevented the defeat of Soviet society because there was strength and the ability to endure within a tight knit society. It is safe to assume that the majority of the population remaining under Soviet control, whole-heartedly supported the government’s war effort. As the most vital resource, labour was regularly supervised; being allocated and redistributed according to the economic priority as they arose from the military demands placed upon the Soviet war economy. Non-essential war industries were almost reduced to zero, with only the barest essentials provided for the civilian population. Indeed this category ‘civilian population’ was nonexistent in the Soviet war economy because of the nature of the conflict. Citizens were either on occupied territory, fighting in the Red Army, working in agriculture or war industries. Indeed, “the Soviet Union became a united military camp.” The employment of women in the Soviet war economy allowed for a greater number of males to be enlisted as soldiers, although women also contributed in this way. Perhaps it is appropriate to note that the achievements on the battlefield and in the factories were, in the final analysis due to the overwhelming support and sense of urgency from the Soviet population. This human factor, the voluntary and moral preoccupation of ‘Soviet’ labour, was a greater advantage than ‘Nazi will’ was to the German economy.
Conclusion
Conclusion: The Economic Basis of Military Victory

'Blitz', nicht Krieg:

The Wehrmacht's preliminary victories (1939-1941) rested in its ability to conduct swift and short distance military campaigns which disarmed its opponent before the latter could mobilize the national economy for war. Hence, the 'Blitzkrieg' strategy was in essence, an attempt to remove the factor of economy from warfare. In these early battles German forces quickly encircled or by-passed enemy divisions. That is to say that the panzers did not conduct head-head engagements against enemy tanks or artillery:

Far from exhibiting confidence in the assault strength of their tanks, therefore, they were actually doing everything they could to avoid a phase of positional warfare. The real strength of armour, in fact, lay not in battle but in the pre-emption of battle.\(^{264}\)

During these early campaigns the Wehrmacht was actually speeding across barren territory trying desperately to stop the enemy from building a new line of defence. Therefore, none of these early campaigns exposed the fundamental weaknesses of the Wehrmacht. One must remember that although the Wehrmacht possessed mechanized formations, that these were attached to the bulk of a horse drawn army. This created the situation of "two different armies, one fast and mobile and the other slow and

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\(^{262}\) Erickson, Road to Stalingrad. pp.231-232.

\(^{263}\) Section heading of Chapter 4, Great Patriotic War of the Soviet Union.

Although this discrepancy did not hinder earlier military operations, it played a major part in the ultimate defeat of the Wehrmacht in the Soviet Union. Guderian readily admits in his memoirs that the early Wehrmacht’s initial successes “struck me as almost a miracle”.

‘Blitzkrieg’ was the economic reflection of Nazi political chaos. The German economy was not mobilized during the 1930s, in preparation for war. Hitler was content to allow the economy to operate unhindered because of his fears that a drop in the German standard of living or that excessive rationing and shortage of food, would cause the population to revolt against the regime. Furthermore, Hitler had little concern for economic matters and the subject itself was secondary to his military interest. Hence, economic potential and military potential were treated as two separate things. This lack of coordination and the decentralized nature of the German economy, lead to the misallocation of labour and resources. Speer’s attempts to correct this situation met with limited success because in the hostile Nazi political climate, the German economy was the property of many individuals, each of whom guarded their piece of the pie against interference. Speer’s goal, the implementation of ‘total war’ had no chance of realization because it would have required a complete reorganization of Nazi politics. Rather than economics, Hitler placed more emphasis on the role of ideology. Nazi presuppositions of ‘Aryan superiority’ gave Hitler enough solace to disconcern himself

265 DiNardo, Mechanized Juggernaut or Military Anachronism? p.15.
with complaints and warnings about low production quotas and parallel bureaucracy. The Führer’s ‘will’ combined with the strength of the German Volk would compensate for any economic and military problems which arose. However, even Nazi ideology admitted the need for Lebensraum and with it, the riches to be found on Soviet territory. In a gamble of ‘double or nothing’ to obtain this treasure, Hitler squandered Germany’s manpower and resource reserves. After the failure of the Wehrmacht to conclude Operation Barbarossa within the prescribed six week period, it was clear that the ‘Blitz’ had failed and the Krieg had just begun.

**Industrial Foundation:**

A victorious outcome during short and rapid military campaigns depends upon a nation’s existing military might. It is the amassing of weapons and ammunition which is the deciding factor in such conflicts. ‘Blitzkrieg’ was based on a single-operation military victory which proved impossible for the Wehrmacht during Operation Barbarossa. The protracted conflict which the Nazi-Soviet war became, was a conflict “between rival industrial complexes”.267 Through two and a half Five Year Plans, the Soviets transformed the inherited war ravaged agrarian Russian economy and laid the foundation for the modern industrial state. This task was undertaken with a sense of impending military and economic urgency. Unlike Hitler who, as aforementioned, removed economic considerations from military planning; Stalin dictated that Russia’s

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266 Guderian, p.112.
best defense against future military aggression lay in the economic empowerment of the Soviet Union. Soviet industrialization was a long-term objective which remained incompleated in the wake of the Nazi attack. Nevertheless, the foundation for latent economic potential had been provided via the geographic dispersion of industrial complexes in the Asian USSR, the creation of new railway lines with an improved track capacity and trial exercises for the formation of a economy-wide contingency plan. In general, the Soviet economic policy had been one of "depth". Together with the success of the economic evacuation conducted between June and December 1941, the USSR was able to absorb its initial losses while recoiling until the economy could arm the military to victory. The Soviets developed their economic base through a series of pre-war plans concentrating on the development of heavy industry and mass-production techniques.

Even though the expansionist Reich was potentially stronger than a USSR segregated from half its economic wealth, the extent of the Soviet economic base in the Asian USSR was sufficient to allow it to out-produce Hitler's Europe (what was channelled into the German War Economy). Due to the limitations of Nazi ideology on the German economy, no significant industrial expansion was undertaken after 1939. As aforementioned Hitler wanted to cushion the German people from the realities of war. This meant that the civilian economy could continue relatively unhindered at the

267 Wright, pp.44-45.
expense of war production. To compensate for the materials shortage which emerged immediately during the first campaign (Poland), the Nazis relied on the capture of the enemy’s logistics capability and the expropriation of wealth. However, this did not solve the German economic situation, rather it created a new military problem, that of the non-standardization of weaponry. The Wehrmacht’s melange of inventory gave rise to training difficulties as well as a spare parts nightmare. Empire proved an economic curse for the German economy. Any potential benefits of occupation were squandered because the exploitation of the wealth from occupied Europe was not centralized but dispersed among various organizations. Many of these functioned as the collecting agencies for individual Nazi leaders.

Logistical Advantages:

Another key element of the Soviet victory was the efficient organization and supply of the output from its war industries. During the 1930s there was a modernization of Soviet industry and a reorganization of the Red Army’s supply system. Changes were made so that the transportation infrastructure was more compatible to the geography possessed by the Soviet Union. Germany, Britain, and the United States however, continued the Napoleonic trend of creating larger army divisions so that there were enough troops to spare for the job of gophering supplies. Rather than making an army self-sufficient, this in fact created the majority of the problems for armies fighting
wars of high mobility. By comparison, the Red Army was provided with numerous supply depots and an independent supply-service corps.268 A further advantage of the Soviet supply system, in comparison with that of the Wehrmacht, was that supplies were more often delivered by trains and trucks rather than horse drawn transport. Meanwhile, by 1942, the Luftwaffe was more involved in the task of supplying the Wehrmacht than conducting its missions as a tactical air artillery. Moreover, its aircraft were 'dispersed' along different fronts and that too, employed singularly rather than in concentration.269 The potential of the Luftwaffe was therefore wasted, and neither its expensive supply agenda nor its bombing campaigns produced any concrete results.

Without an effective and efficient means of supply (logistic capability) wars are never won. In the 1930s, Hitler’s prized Autobahn was completed. Yet, its ultimate purpose was as a public employment project270, because its logistic potential to the Reich proved negligible. This is because although the Nazis built roads and created reserves of tanks (and trucks), they had overlooked the fact that there was a need to train drivers. Indeed, as a nation of drivers and car owners, both Germany and Italy were at the lower end of the totem pole. It is ironic that “the two least mobile nations of Europe decided to launch the most mobile war of the century”.271 It has sarcastically been noted that the greatest use of the Autobahn came during the American assault into

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268 Davies, et. al., pp.241-242.
269 Muller, p.8.
270 Ironically, a get the people off the streets program, by creating streets.
Germany-proper and thereafter, the American occupation (American jeeps and motor transports). It has also been mentioned that the glimmering concrete Autobahn provided allied bomber pilots with a degree of directional guidance.²⁷²

Unlike the Soviet railway system, the Reichsbahn was never improved with regard to its track capacity. As the German military commitment grew the logistics system ground to a halt, especially since there was a disparity between European and Soviet railway gauge. Furthermore, individual Nazi bigwigs administered sections of the Reichsbahn within their respective Gauen or Kommissariats as they did the economy, as personal possessions. Hence there was no centralization of the economy or the transport system which meant that the supply problem was horrendous. As motor vehicles were destroyed and the Reichsbahn became unreliable, soldiers became dependent on horses to serve as mounts and to haul supplies. This measure failed miserably because of the quality of the animals in question (their inability to withstand the Russian climate)²⁷³, and also because the veterinary care needed for the animals represented a time and resource detriment. By December 1941, the element of mobility

²⁷¹ The source is forgotten, perhaps Ellis, *Brute Force*, or Di Nardo, *Mechanized Juggernaut or Military Anachronism*?
²⁷² Again, source unknown.
²⁷³ There was a requisitioning problem. It was found that the German farmers hid their best animals and supplied the Wehrmacht with sickly or old horses which were unfit for army service. The requisitioners were thus dependant on Polish horses.
had been lost by the Wehrmacht. Its situation was that of an invading force which was stranded and restricted in its operational capability.

Cost Efficiency:

Good weaponry is useless without the fuel to run it, the spare parts to maintain it, and the means to transport it. In all these departments the Red Army had an advantage over the Wehrmacht. The Soviets extended the service life of their weapons with an ample supply of spare parts and the excellent servicing and repair divisions which accompanied the Red Army. Even the burnt out chassis' of German tanks on the Eastern front were stripped of any usable parts, the remainder sent to the rear to be melted down into steel. Superficial additions to Soviet weaponry were eliminated thus maximizing available labour and raw materials. Soviet weaponry designs were simplified, not because the Soviet soldier was ignorant, but because features which did not justify a significant advantage on the battlefield were excluded. The Red Army’s ‘core’ weapons: the 76 mm gun, the Il-2 Shturmovik fighter, the MiG-3, the Yak-9, the BM-13 Katyusha rocket launcher, the Stalin-2 tank, and the T-34 tank; were either better than or comparable to their counterparts in any theatre of war. By comparison the unwarranted production ‘adjustments’ to German weaponry resulted in a decreased weapons’ performance, the non-homogeneous composition of the Wehrmacht’s weaponry, and a servicing problem. Wehrmacht officers always complained that their inventory was regularly substituted in favour of maintaining existing machinery. The
complexity in manufacturing and operating German weaponry also increased the time period before the new creation was free of operational problems. Resources and labour were wasted on the principle of ‘qualitative superiority’, another example of ideology interfering with economics. Such wastage ultimately lost the German war effort.

**Bureaucratic Minimization:**

An important factor which empowered the Soviet economy was the government’s willingness and ability to reduce the administrative process of conducting a war to a bare minimum. Unnecessary governmental bureaucracy was eliminated in wartime. By comparison, the systematic centralization of the German economy could not be achieved as long as the Nazi’s state bureaucracy was so utterly disorganized. While the Soviets dissolved Evacuation Committees when they were no longer necessary, the Nazi level of bureaucracy increased exponentially as the war continued. This is perhaps due to requirements of occupational administration, however, it is more likely a consequence of Nazi bureaucratic anarchy. The lack of Nazi political centralization was inefficient when compared to the streamlined approach of Soviet government. This can be illustrated by he contrasting of leadership personalities. Stalin was a man who ruled a one man state, Hitler on the other hand was man who thought he ruled a one man state. Stalin was a workaholic who was willing to make all decisions

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274 Werth, *Russia at War*, p.303.
275 Overy, *Why the Allies Won*, p.244.
276 Wright, p.45.
himself. Hitler was preoccupied with interfering in the military affairs of his generals, while disregarding all else and allocating responsibility wherever necessary. Stalin's 'lieutenants' feared for their lives and carried out his commands to the letter. Hitler allowed his cronies, especially the Altkämpfer, to rule separate sections of the economy and territory in his name but without his interference. Stalin was a man of action, when a problem was presented to him a solution (even if it was the wrong one or a bad one) was found. Hitler chose to disregard and ignore problems which were brought to him. He fostered bureaucratic competition or else ranted about the utter stupidity of the people surrounding him who did not possess the 'will' of action. This contrast in leadership alone was enough to effect the performance of the national economy of each state and its war effort.

**Economic Prioritizing:**

Military victory and its possibilities are connected with the economic ability of the nation. Due to the centralized nature of the Soviet economy and its power structure, economic priorities were a natural phenomenon which existed prior to the war and were closely calculated during the conflict. However, the political structure of Nazi administration allowed for the economy to become the property of various officials. Economic priorities were decided at the discretion of many individuals. It was inevitable that conflicts should arise among requisitioners, suppliers, and the various
branches of the armed forces. Indeed, almost every middle ranking Nazi official retained a department for economy of one kind or another. The dire straits in which the German war economy was prior to Operation Barbarossa could not be cured without removing the Nazis from power. Hence, a ‘smash and grab’ policy vis-à-vis the Soviet Union was employed. The Wehrmacht’s defeat before Moscow was the defeat of ‘Blitzkrieg; that is to say a failed gambit to exclude the latent factor of the Soviet economy.\textsuperscript{278}

The success of Marshal Zhukov’s December counter offensive at Moscow, was the first sign of resurgent Soviet economic power. The experience of pre-war Soviet contingency planning provided valuable information and the ability for Soviet economic planners to quickly construct a national plan. This plan was constantly up-dated on a fiscal quarter to quarter basis which ensured that economic prioritizing was coordinated with military objectives. The reliability of centralized planning was based on a unique process through which factory directors and technical specialists conferenced directly with Stalin and other leaders. There were regular updates of a task in progress, and there were some attempts to amend central directives if they proved unviable. The advantage to this approach was that the entire economic potential of the USSR could be channeled into a single military operation for a given amount of time, and then

\textsuperscript{277} Weinberg, p.281.
redirected elsewhere. Between June and December 1941, the Soviet Military objective was survival and the economy, and this was reflected through an evacuation of industry and labour. From the beginning of 1942 until the end of the Battle of Stalingrad (Feb 1943), the Soviet military objective was the defensive requirement of holding the front from further collapse. The economy reflected this in its production of ammunition and artillery. After the spring of 1943, the Soviet military objective was to repel the invader. The economy reflected this with an increased production of tanks, aircraft and artillery. By Spring 1942, Soviet production in all categories of weaponry had exceeded Soviet losses and by 1943, the Soviet economy had a clear superiority in weapons production over the German economy.

Allocation of Labour:

Of the total 11 million men who served the Red Army in 1942 (its peak), not more than 6.5 million were stationed on the front lines. They were opposed by Axis troops totaling a little more than 3 million. This two-to-one advantage in field combatants was hardly in itself, the explanation for the Wehrmacht’s defeat. Furthermore, the majority of the Soviets’ 11.3 million casualties were sustained during the first fifteen months of hostilities, “for the remainder of the war, loses of two-to-one

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278 Wilt, p.164. Another author says that the battle of Moscow was the failure of 'Blitzkrieg', while Stalingrad represented the Nazi failure to rectify their economic situation by seizing Soviet oil reserves. Larionov, in Wieczynski , p.209.
was the price of attacking a highly proficient defender".\textsuperscript{279} It was a mass of weaponry and skill, rather than men, which defeated the Wehrmacht. It can be said that:

Hitler under-evaluated the resilience of the State planned economic system which Stalin had created. This system, contrary to expectations, turned out to be relatively stable under the extreme conditions of war... the Third Reich’s Nazi ideology and dictatorial, autocratic regime achieved superiority over Western bourgeois democracies; but in the East it met with a similar, perhaps even better organized regime, and fascism could not withstand the trial by fire.\textsuperscript{280}

The overall Soviet contribution in the defeat of Nazism was: 11 million soldiers, 100 000 tanks, 130 000 aircraft, 800 000 guns and mortars, 30 million small arms including 12 million rifles, 1 billion artillery and mortar shells and bombs, and 40 billion cartridges.\textsuperscript{281}

In any war the most important limiting factor, an obviously economic one, is manpower for soldiery and labour. Although relative populations (numbers) do account for much, it is more important to review the allocation of labour and manpower. This fact was illustrated during the Nazi-Soviet conflict. Hitler’s potential ‘250 million Europeans’ did not help his Reich to overcome a Soviet Union which had been halved of its population and economic capacity. Many of the reasons for this have already been mentioned: the lack of centralization, parallel bureaucracy and bureaucratic competition, an unwillingness to curb the civilian economy, the inefficiency of industrial production and the output of non-standardized weaponry, and the failure to mobilize

\textsuperscript{280} Larionov, in Wieczynski, p.208.
women. Meanwhile, the Soviets reduced any production for civilians to a minimum and it has already been noted that the category of civilian during the Great Patriotic War is somewhat nonsensical. During each corresponding phase of the economy to the military struggle, labour was channeled. The temporary crisis in December 1941, when the Red Army had absorbed too many civilians who could otherwise be employed in industry, was swiftly corrected.

A final point of the Soviet economy and its impact on the war effort is the emotion with which labour and soldiery conducted itself. Understandably, this is a category which raises eye brows. It goes without saying that the German attachment to *der Heimat* also existed. Nevertheless, the psychology of combatants and populations differs according to situation. The morale of the Wehrmacht and the German population plunged dramatically as the conflict with the USSR was prolonged. The morale of the Soviet population had its low and high points but never lost its motivation nor its willingness to repel the invader. The sheer scale of the Nazi-Soviet conflict absorbed one in eight Soviet citizens, and for every one, countless hearts beat with a renewed intensity. Hence, I do not agree that emotion is an unquantifiable phenomenon, for it has come through the pages of most of the information I have looked at. The human face has not been erased from this economic story.

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SUPPLEMENTARY READINGS


CENTRAL STATISTICAL BOARD OF THE USSR COUNCIL OF MINISTERS


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