

# ONE GREATER THAN GUDERIAN - TUKHACHEVSKY AND THE DEVELOPMENT OF THE SOVIET ARMED FORCES

## UM MAIOR DO QUE GUDERIAN – TUKHACHEVSKY E O DESENVOLVIMENTO DAS FORÇAS ARMADAS SOVIÉTICAS

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### **Abstract**

This article presents a brief introduction to the life and work of Soviet Marshal Tukhachevsky, using an analysis of soviet military development in the 1930s and selected operations of World War Two, as well as recent military history, to evaluate his work's influence, success and relevance, in order to properly judge his importance as a military theorist and leader and his contribution to the evolution of modern warfare

**Keywords:** Tukhachevsky; Deep Battle; Mechanization; Airmechanization; Soviet Military Theory.

### **Resumo**

Este artigo apresenta uma breve introdução à vida e obra do Marechal Soviético Tukhachevsky, procurando através de uma análise do desenvolvimento das Forças Armadas Soviéticas nos anos 30 e de operações da Segunda Guerra Mundial, bem como da história militar mais recente, avaliar a sua importância enquanto pensador e líder militar, assim como a sua contribuição para a evolução da guerra moderna.

**Palavras-chave:** Tukhachevsky; Batalha em profundidade; Mecanização; Aeromecanização; Teoria Militar Soviética.

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## Introduction

The military are often accused of always preparing for the last war. That cliché was never as far from the truth as in the 1920s and 1930s, when around the world gifted officers explored the possibilities of new technologies in the quest for the best way to fight the next war.

They were motivated by the experience of the Great War, whose extensive casualty lists and dramatic political consequences had demonstrated the vast dangers that awaited those who were not prepared, and by a love of technology fueled by the extraordinary progresses that had been made in the war years.

After the end of the Second World War, a narrative was established within the military history community that modern warfare, employing the coordinated use of tanks and aircraft in innovative tactical schemes to avoid the sluggishness of the trench warfare of the Great War, had been a German invention, mostly credited to General Heinz Guderian, inspired by the masterful works of British visionaries like Major-general Fuller and Sir Basil Liddell Hart.

This was primarily originated from Liddell Hart himself, the British theorist having struck an informal deal with the German Generals after the war to present them in a favorable light in return for being credited as an influence on their thinking (Danchev 1999)<sup>1</sup>. The process was magnified by the US Army reliance on former OKH<sup>2</sup> chief of staff General Franz Halder to provide historic context to the cold war study of the soviet threat (Aubin2012.)

It was only in the 1990s when access to Russian sources became easier, and Soviet military history better understood, thanks to the groundbreaking work of a few notable military historians, among whom mention must be made of US Army Colonel David Glantz, that an alternative view began to gain followers in the west. This view regarded Soviet developments of the 1920s and 1930s in the field of the modernization of military science as being superior to their German contemporaries.

And, much as Heinz Guderian become the poster child for German military genius and *Blitzkrieg* an all-encompassing catchword for mechanized warfare, Marshall of the Soviet Union Mikhail Nikolayevich Tukhachevsky became the hero of the newly perceived 1930s soviet revolution in military affairs and *Deep Battle* the key word for Soviet military prowess. The glorification of Tukhachevsky easily slides into myth making territory due to the circumstances of his death, and the efforts of the Stalinist leadership to undo his work. Presented often as the greatest “what if” of modern military history he is regarded by many as the man who could have smashed Hitler and avoided the Soviet defeats of the first phase of the Great Patriotic War while at the same time, as a consequence of the Stalinist purges, we are denied the usual tools of extensive archives and battle experience for evaluating him.

Since myths are most valuable when challenged, this article will try to evaluate the significance of Tukhachevsky’s work for the evolution of Soviet military power, as well as its merits. In order to do so, and having formulated the main question in rather dramatic

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<sup>1</sup> For example presenting them as “technical specialists” with no interest on politics or knowledge of the crimes of the III Reich.

<sup>2</sup> OKH (Oberkommando des Heeres) was the Army General Staff.

fashion, and with a nod to Sir Basil, on the title, we will try to evaluate his influence, success and relevance.

To determine his influence we will look to the armament programs of the Soviet Union in the 30s, and try to determine whether the Soviets were arming themselves in accordance with the Marshal's theories, in order to establish if he was purely an intellectual working from within a think tank or a real driving force within the Soviet Armed Forces.

To evaluate his success, we will see whether his predictions on the evolution of warfare were vindicated, and try to identify his theoretical DNA in Soviet military operations of World War Two.

To judge his relevance we will search for his influence in modern military thought, whether direct, or more critically as we are talking about an author whose books were, literally, burned, indirect.

From this analysis we will attempt to draw a conclusion regarding whether the man who was shot by the NKVD<sup>3</sup> in a Moscow prison in June 1937 (Simpkin 1987) was actually "one greater than Guderian"



Figure 1 A 1963 soviet stamp celebrating Marshal Tukhachevsky, or more specifically, his then recent rehabilitation.

Source: [http://en.wikipedia.org/wiki/Mikhail\\_Tukhachevsky#mediaviewer/File:USSR\\_stamp\\_M.Tukhachevsky\\_1963\\_4k.jpg](http://en.wikipedia.org/wiki/Mikhail_Tukhachevsky#mediaviewer/File:USSR_stamp_M.Tukhachevsky_1963_4k.jpg)

<sup>3</sup> The predecessor to the KGB

## INSTEAD OF A PREFACE

*In the terrible years of the Yezhov terror, I spent seventeen months in the prison lines of Leningrad.*

*Once, someone "recognized" me. Then a woman with bluish lips standing behind me, who, of course, had never heard me called my name before, woke up from the stupor to which everyone had succumbed and whispered in my ear (everyone spoke in whispers there):*

*"Can you describe this?"*

*And I answered "yes, I can."*

*Then something that looked like a smile passed over what had once been her face.*

*Anna Akhmatova*

("Instead of a preface" was written as an introduction to Akhmatova's "Requiem" set of poems written in secret in 1935-1940 about Stalin's terror)

## Hero of the Soviet Union

Mikhail Nikolayevich Tukhachevsky was born in February 1893 near Vyshegor in Byelorussia, the fourth child of an impoverished family of modest aristocratic origins (Simpkin 1987). A gifted youngster who both played and made violins and had an active interest in science, he did exceptionally well in high school when his family moved to Moscow, but was unable to afford a university education. Instead he took the traditional route of the penniless nobles of joining the Army, in his case through the 1<sup>st</sup> Moscow Cadet Corps, from where, in 1912, aged 19 he gained access to the Alexandrovskii Military College. Graduating just in time for the Great War in June 1914 with stellar grades, he was commissioned into the prestigious Semenovskii Guards Regiment. His career on the imperial Army was brief, having been captured by the Germans, reportedly after being rendered unconscious by an explosion while leading a counter attack (Simpkin 1987). After a colorful prisoner of war experience, with escape attempts, a transfer to a special camp for difficult captives, an alleged encounter with fellow prisoner of war Charles de Gaulle, etc, he was released in October 1917. Having rejoined the Army, he left the service during the revolutionary turmoil, eventually returning to Moscow in early 1918 to join the Red Army. Having associated himself with Trotsky early on, he was rapidly promoted to Military Commissar in the Moscow Defense Area (Simpkin 1987), a role that earned him Lenin's trust. He then became Trotsky's troubleshooter, being sent to solve one military crisis after another, his actions proving decisive in securing victories both on the Northern and Southern Fronts. By 1920 he was, at 27 years of age, twice holder of the order of the red banner and Commander in Chief of the Southern (briefly) and later the Caucasus Fronts. He was also a young widower, his wife having committed suicide. (Simpkin, 1987)



**Figure 2 An idealized image of the young Tukhachevsky in his role as Trotsky's troubleshooter during the civil war**

Source: <http://topwar.ru/24300-chestolyubivyy-marshal-sovetskogo-soyuza.html>

He was one of the leading soviet commanders in the Warsaw campaign in 1920, and at that campaign he and Stalin found themselves on different wings of the Red Army's advance, and later on opposing camps regarding blame for the defeat. His reputation undiminished by the Polish victory, he led the repression of the Kronstadt and Tambov rebellions before becoming Director of Studies for Strategy at the Academy, and at the same time Deputy Chief of Staff under his friend Mikhail Frunze, having sided with Frunze in the debate on whether the USSR should have a conventional standing Army, as they advocated, or a revolutionary one, as proposed by Trotsky, Lenin opting for Frunze's view.

From that moment to his death he was to be the Soviet Army's leading intellectual voice and would hold a series of high responsibility postings, despite the fact that after the death of Lenin in 1924 and Frunze in 1925<sup>4</sup> he had to operate under the shadow of Stalin, who supported the conservative faction of the Red Army, exemplified by Stalin's friends Voroshilov, Budenny and Timoshenko. This has led some to claim that his influence peaked in the 20s and was limited from then on (Simpkin 1987) an assumption we will analyze in this article.

Promoted to Chief of the General Staff from Frunze's death in 1925 he held that post until 1928. He was then appointed to command the Leningrad Military District for a few years, and was brought back to Moscow to lead the Army's Technology and Armaments Department from 1931, being one of the five Officers elevated to the title of Marshall of the Soviet Union in 1935. He was removed from the post in 1936, remaining as deputy Defense Commissar, mostly occupied with the revision of the field regulations until being nominated Commander of the Volga Military District in May 1937 (Naveh 2001)

He was to be the highest profile victim of the purges in the Armed Forces that had begun with the trials of Zinoviev and Kamenev (Naveh 2001)<sup>5</sup>. It has been claimed that he was a victim of a German plan to eliminate him through false information leaked to the NKVD (Simpkin 1987), and that he was plotting a coup. The extent of the purges that followed makes these explanations redundant if interesting. After being arrested in 26<sup>th</sup> May he was shot in June 11, 1937, made into a non-person and his written works were extensively destroyed.

His is a very Russian story. Born an aristocrat, he became an ardent communist and a soviet hero, helped to save an actual revolution in the civil war and lead an unprecedented revolution in military affairs before being killed by the same state to which defense he had dedicated all his considerable talents.

### **Military Leninism, Tukhachevsky and the development of soviet military thought.**

A central quest of western military thought is using maneuver to defeat one's opponent with minimal casualties on our side, ideally enabling a smaller army to defeat a larger one by securing positional advantage. Ever since Epaminondas cleverly outmaneuvered a stronger Spartan force at Leuctra the bold movement that secures victory has become a military ideal.

The classical expression of this ideal is the Napoleonic "manoeuvre sur les derrières" that was deeply ingrained in the minds of the generations of officers of the long European years of relative peace between the "world" wars of 1789/1815 and 1914/1918. This was to be combined, in the case of the German Army to an almost obsessive degree, with the search for the "decisive battle", as demonstrated by the elder Moltke's victories of 1866 and 1970, and popularized by Schlieffen extremely influential book on the battle of Cannae (Widemann 2012).

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<sup>4</sup> Rumored to have been orchestrated by Stalin (Simpkin 1987)

<sup>5</sup> More appropriately the large scale purges. In his research on the history of the Soviet General Staff Boris Orlov claims that Stalin began purging the Armed Forces from beginning of the 30s decade, 1937 marking the intensification rather than the start of the purges. (Naveh, 2001)

Before World War One all the General Staffs of the major contenders tried to conceive plans based on maneuver to avoid the by then obvious risks of frontal assaults in face of modern firepower. The Schlieffenplan, and to an even bigger extent Plan XVII, were to become very expensive tributes at the altar of maneuver.

The realities of the Great War were to impose the use of much less elegant, but more effective, attritional tactics. The technological developments of the war were however to provide military minds with an alternative path to restoring the primacy of maneuver. In essence, the concepts of using mechanized forces for high tempo operations against less evolved adversaries popularized by Fuller and Liddell Hart and made a practical reality by Guderian and his comrades, were a return to classical Napoleonic concepts with new tools. In order to avoid fighting the last war, the German theorists behind Blitzkrieg were aiming to re-fight an even older war, the short campaigns of the elder Moltke, with their bold maneuvers and decisive battles. Plan Yellow, that provided the decisive victory over France in 1940 and made the German Army feel like it was 1870 all over again, is a pure expression of Napoleonic thought in all its bold decisiveness. But if history can teach us a lot of lessons, there is an obvious one that often eludes military theorists and that is a central element of Marxist thought: Things Change!

And while Fuller and his followers were busy reinventing Napoleonic warfare, in the newborn socialist state and self-proclaimed workers' paradise in the east, a few civil war veterans were about to change things.

If military history is at the core of western military theory, Marxism-Leninism is at the core of all Soviet military theory. Lenin was extremely influential in all aspects of soviet thought and the military is no exception (Simpkin 1987).

Two basic tenants would frame soviet military theory. One was that the USSR was bound to be attacked by the imperialist states<sup>6</sup>, and that in the resulting war the ultimate aim of the Soviet Union war would be to turn imperialist war into a civil war in those states, allowing for the rise in those states of proletarian governments that would ally themselves with the USSR (Lenin, 1977). The other was that the fate of war would be determined by political-economic factors, essentially by production and mobilization capability.

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<sup>6</sup> This explains why the Soviets found it necessary to build extensive fortified lines along their borders, even though their doctrine advocated offensive operations. These were meant as a shield, providing protection from enemy attack but also concealing the concentration of the leading armies (Simpkin 1987).



Figure 3 A Soviet poster representing Lenin as a towering presence over the Soviet War effort, an image that matches the reality of soviet military thinking.

Source: <http://images.linnlive.com/1e037c81da387d8e4d1c2557d0a46f2b/b7d5376d-d9e9-4aaf-ad40-45f69e100453.jpg>

Having incorporated Clausewitz by way of Engels, a remarkable military theorist in his own right<sup>7</sup>, Lenin was fully aware of the nature of war and of breaking the enemy will to fight. He was also certain that a socialist state would have a stronger will, since it could rely on the party to ensure the people's adherence to the cause, and a stronger production capability thanks to the stronger mobilization possibilities of a centralized economy. Both these concepts were to figure prominently on Frunze's and Tukhachevsky work.

Within this framework, the Soviets naturally rejected both the compulsion to restore maneuver in the neo Napoleonic sense prevalent in the west and the idea that wars could be won by small, highly mechanized armies against large, traditional ones.<sup>8</sup>The bases for this double rejection are perfectly clear in Tukhachevsky critique of Fuller's work, in his 1931 preface to the abridged Russian edition of Fuller's "Reformation of War" (Tukhachevskyor.1931)

The soviet Marshall assumes that,asno nation will have a monopoly of progress, mechanization will spread, and much as mechanization of industry hadled to an expanded proletariat, mechanization of war would lead to more massive, not smaller armies when nations deployed their "technological mass" on the battlefield. In a fight between two industrialized states an 18 division Army with 5.000 tanks will be more likely to face an 180 division Army with 50.000 tanks than an 180 division army without tanks, the smaller army being naturally overwhelmed even if, in an effort to fight quantity with quality, it was to form units or complete armies of elite troops<sup>9</sup>. If anything the maintenance requirements created by mechanization would increase the mass of the armies. It would therefore be more logical to prepare for a war between two large mechanized armies than to conjecture about asymmetrical wars between mechanized and un-mechanized armies. Tukhachevsky then goes on to criticize Fullerfor failing to expand the concept of mechanization into what the Russian calls Airmechanization.

The first Soviet doctrine, usually designated as "Broad front" (Simpkin 1987),or "successive operations" (Glantz 1991) was introduced in Tukhachevsky articles of the early 20s and formulated in the "Higher Commands – Official Guidance for commanders and field commands of the army and fleet" coordinated by Frunze. This model, that is most notable for introducing the "operational level" of the conduct of war, was to form the base from which deep operations were to evolve. As early as 1926 Tukhachevsky wrote that "modern operations involve the concentration of forces necessary to strike a blow and the infliction of continual and uninterrupted blows of these forces against the enemy through an extremely deep area" (Glantz 1991).

The aim was, in clearly Leninist terms, to inflict a level of attrition that would lead to a breakdown in the enemy political (imperialist) order. The soviets were not trying to solve the attrition Vs maneuver dilemma, but, in the Marxist dialectic tradition, to achieve a synthesis of attrition through maneuver.

<sup>7</sup> Engels was a military correspondent for the Manchester Guardian in the 1860s. It is interesting that he criticized Moltke's "forward concentration", a very Napoleonic maneuver that was to lead to victory at Königgrätz as being too risky (Holmes 1976).

<sup>8</sup> Russia was also free from the influence of colonial conflicts, usually asymmetrical in nature.

<sup>9</sup> The example given in the original text is extensively quoted here due to its premonitory nature regarding the events of World War Two a decade later.

It is therefore not surprising that the Soviets first operational model appears to have been inspired by the western front allied offensives of 1918 that broke the fighting power of the German Army and brought Imperial Germany to the brink of a civil war collapsing its imperialistic government. This clear similarity between the concepts implemented by Frunze and the actions of the allied forces in final stages of the great war is not mentioned by either Glantz or Simpkin, and could indicate, in our opinion, that the allied command was, from September 1918, *de facto* operating at the operational level, maintaining a level of control over the conduct of the war that the Germans, lacking the theoretical instruments for it, could not match. It was precisely in establishing procedures for the conduct of successive operations that the Soviets found the need to define the operational level and introduced the concept of operational art, first formulated by A. A. Svechin in 1926 in his book *“Strategy”* written while working at the new Frunze Academy (Glantz 1991).

The new concepts, expanded in Tukhachevsky's close associate and friend Triandafillov's book *“The character of operations of modern armies”* published in 1929 (Glantz, 1991) were made into official doctrine through the 1929 field regulations that also introduced the concerns with mechanization that signal the movement towards deep operations. But before we begin to explain that concept, it is important, to provide context, that we summarize Tukhachevsky views on war, as explained in his extensive 1931 article *“New questions of war”* and his 1928 article for the Great Soviet Encyclopedia *“War as a problem of Armed Struggle”*

Engels maxims that “Nothing is quite so dependent on economic conditions as the Army and the Navy” and that “the prerequisite for every advance in the conduct of war must likewise be new means of production” are the starting point for Tukhachevsky's view that future wars would be fought by mass armies benefiting from the full resources of their nations. He argues that war should not be fought only with military forces, but with “organized and concerted pressure and by offensives on every front of the conflict – economic, political and so on” (Tukhachevsky or.1928)<sup>10</sup>. He states that the greater mass of modern armies will not make war move at a slower pace, but rather that the progress in technology will increase the pace of operations.

To characterize the way in which armies should incorporate the advances in technology, he creates the term Airmechanization, that he characterizes as the incorporation of advances in aviation, tanks, radio and chemical warfare in an integrated whole.

This integrated mechanized army will fight a deep battle using mechanized airborne forces in conjunction with long range tank groups including infantry in armored personnel carriers, supported by mechanized engineer units and attack aircraft to penetrate the enemy defenses and engage his rear echelon while tank supported infantry strikes his first echelon defenses. This will, he argues, require all tanks to have a capable antitank gun, as in a large scale mechanized battle “success will go to the formation that has more gun tanks capable of destroying enemy tanks” (Tukhachevsky or.1931).

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<sup>10</sup> Hybrid operations are a new word, not a new concept.

He remarks that this mechanized armies will have an “enormous” need for logistic support, stresses the need for motor transport, since, he warns, air power will render railway transport undependable, and recommends using air transport for critical situations. He also stresses the need for extensive and realistic training and large scale exercises and for initiative on the part of all commanders, stating that “waiting for orders really means doing nothing”(Tukhachevsky or.1931).

Concerning naval forces, he advocates the use of submarines, torpedo craft employed “en masse” and aircraft, primarily high speed torpedo aircraft but also bombers using specially developed armor piercing bombs, claiming that the battleship had lost its importance.

It was within this intellectual framework that the next step of soviet doctrinal evolution was to be introduced.

### **Deep Battle, Tukhachevsky’s doctrinal legacy**

Deep Battle was the final expression of Tukhachevsky operational thinking and was fully incorporated in the 1936 field regulations. This takes the concept of successive operations further. The limitation of that concept was that while it allowed for strong blows to be inflicted on the enemy, these were limited by the fact that only the first echelon of the enemy forces could be guaranteed to be exposed to the attackers actions. As in 1918, the defender’s greatest advantage was that he could manage his reserves to maintain some control of the situation and therefore control his side of the battle in order to limit his losses.

Integrating the classical Russian military principle of “simultaneity” (Simpkin 1987) with the successive operations concept, deep operations were based on the idea of denying the defender the possibility of managing his reserves by engaging his forces in the entirety of their operational depth<sup>11</sup>.

To do so the attackers would deploy in two echelons, the attack echelon and the development echelon<sup>12</sup>. The first, consisting of all arms formations would engage the enemy first echelon and create the initial breach, through which the second would penetrate and engage the defenders rear areas and second echelon forces. The aim was not to create a classical pocket of surrounded enemy forces, but to destroy the enemy forces in a “in depth” battle. The enemy main forces would be destroyed by the attack echelon, while the enemy reserves and rear units would be destroyed by the development echelon. The whole battle would be supported by coordinated air attacks, and whenever possible by airborne assaults, including the air deployment of mechanized units.

In a defensive situation, the defenders would create an in depth defense, reversing the process by holding key points and creating a network of anti-tank lines to destroy the enemy inside the defensive lines.

<sup>11</sup> Being a very original concept from a military point of view, this is however very easily understood by experienced chess players, since it corresponds perfectly with the way chess theorist study the Mid-Game.

<sup>12</sup> Not to be mistaken with a reserve or an exploitation force in the western sense.

This concept was to be expanded in the revised 1939 field regulations, that were never to be issued since most of the people who were working on them were killed in the purges.

To perform this type of battle a new mechanized force structure was created. The main deep penetration forces were to be the Mechanized Corps, instituted in 1935, tank heavy formations with two tank brigades (BT tanks) each with four tank battalions and one motorized rifle battalion and one rifle Brigade (plus a Recce and a Signal Battalions). These formations had a strength of 348 fast tanks, 63 Recce Tankettes supported by 52 flamethrower tanks and 20 guns. (Glantz 1991)

Having created their first mechanized brigade in 1930 the Soviets had, in 1936 four Mechanized Corps and six separate (independent) mechanized brigades, along with fifteen Cavalry divisions (with four cavalry regiments and one tank and one artillery regiment each) and an additional six separate tank regiments and eighty three tank battalions or companies for infantry support (Glantz, 1991). These were backed by a dedicated tactical air force with modern aircraft that could guarantee air superiority and provide extensive close air support and interdiction, and by a large independent air force with powerful four-engine bombers. They could rely on three airborne brigades and an additional three airborne regiments that had performed large scale exercises, including mass drops and air deployment of tanks and logistic vehicles.

Extremely advanced doctrinally, well organized, trained and equipped, the Soviet armed forces seemed undefeatable in 1936. And then it all went terribly wrong.

### **The Army that defeated itself, purges and military disasters 1937-42**

In 1936 Pravda published a high profile article denouncing mechanization, on the basis strongly supported by Stalin's longtime friends Voroshilov and Budenny that horses were and would always be superior to machines (Naveh 2001). In that same year the large scale purges of what Anna Akhmatova calls "the terrible years of the Yezhov terror" began to hit the military hard. The Army lost 3 out of 5 Marshalls, 13 out of 15 Army commanders, 57 out of 85 Corps Commanders, 110 out of 195 Division Commanders and 220 out of 406 Brigade Commanders. All the 11 Vice-Commissars of War, 75 out of 80 members of the Supreme Military Council, including all the Military District Commanders. In terms of ranks the Army lost 90% of its Generals and 80% of its Colonels (Glantz 1991). It was the most effective decapitation strike in history, and totally destroyed the Army combat efficiency.

While tanks kept on being produced, and since tank engineers mostly avoided being purged the Soviets maintained their lead on tank development, the large mechanized units that had been created to use them were dissolved<sup>13</sup>, the doctrine for their deployment was banned, and most of the people who had experience leading tank units were killed. Without proper training and competent leadership, the Soviet advantages in quantity and in the technical superiority of the T34 and KV-1 tanks introduced in 1940 were to be wasted in 1941.

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<sup>13</sup> After the Battle of France in 1940, plans were made to reintroduce them, to be implemented in 1942.

The impact was felt throughout the whole of Soviet society. The aircraft industry was hit particularly hard, with leading designers such as Tupolev being arrested and many design teams working from special NKVD managed “working prisons” (Gunston, 2000) and many design bureaus being reorganized for political reasons<sup>14</sup>. Having led the world in the mid-30s, the Soviet Union was to pay a heavy price for the lost years of the purges. Polikarpov’s next generation designs for fighters the I-180 and later I-185<sup>15</sup> were not introduced in service and the soviets had to fight with inferior machines until 1943, allowing the better trained and equipped Germans flyers to amass huge victory scores.

The price the soviets paid was huge. The military disasters of Barbarossa were followed by an extremely costly victory in Moscow, and the advantage gained in the winter of 1941/1942 through the immense sacrifice of Soviet soldiers was wasted in the disastrous offensives in Kharkov and the Crimea in the first half of 1942 (Glantz, 1998), allowing the Germans to regain the initiative for their 1942 “Blau” offensive.

The purges were probably the most expensive destruction of a nation’s effective fighting power in peacetime ever, and by decapitating its army, Stalin condemned the Soviet people to an immense sacrifice, millions of people dying in four years of titanic struggle before they vanquished the Nazis. It was a blow the USSR was never to fully recover from, the purges effectively marking the turning point in what had been a steady rise in soviet power from the revolution to the mid-30s. Marxism-Leninism was one of the first casualties of the purges, being replaced by Stalinism, and never successfully resurrected.

## **Tukhachevsky’s machines, soviet military technology 1925-1937**

### **1. Tanks<sup>16</sup>**

The Soviet Army first adopted tanks by turning captured allied supplied tanks of their adversaries against their former owners during the civil war. The model that better suited their needs was the French FT-17, and in 1922 they built 14 local copies at Sormovo. They moved on to an improved version, the MS-1 light tank, later renamed T-18, and produced their first medium tank in the T-24 of 1931. Along with local designs they also bought a few imported tanks, including Carden Lloyd tankettes and Vickers Amstrong six ton light tanks from Britain as well as the Christie T-3 from the US. They paid close attention, also, to the Vickers experimental 16ton MkIII A6 Medium tank that was tested in Britain. Having studied these models the soviets developed the main types of tanks they used through the 30s, in all cases clearly superior to the western models that had inspired them. These were the T-37 and T-38 reconnaissance tankettes, the T-26 light tank, the BT-2/5/7 fast tanks and the T-28 Medium tank.

<sup>14</sup> Polikarpov had suffered the same fate in 1929/1930 and in 1940 he was removed from the leadership of his design team, the better connected Mikoyan replacing him.

<sup>15</sup> A small number of pre-series I-180 was tested in combat with excellent results. When the I-185 was tested soviet test pilots pronounced it the best fighter in the world. At the time the Yak-1 and Yak-7 fighters being used at the front were inferior to the Bf109F-4 in virtually all aspects (Gunston 2000).

<sup>16</sup> Main sources for this section are (Fleischer 1999) and (Ness 2002)

Where those tanks developed according to Tukhachevsky concepts? If they were, that would be manifest in their armament which would have to be capable of engaging enemy tanks, their diversity to suit the several roles envisioned, and their ease of production to guarantee the required equipping of large mechanized forces.

Let's then consider their characteristics:

The T-37 and T-38 were small two man tankettes notable for being fully amphibian. Command versions had a radio. Well suited for their role as reconnaissance vehicles, they compare favorably with foreign machines, like the PzKfw I or the Italian CV-33. Being light, they were used for the first experiments in air deployment, slung under TB-1 medium or TB-3 heavy bombers.



**Figure 4 A T-37 tankette slung under a TB-3 Bomber for air deployment. Tukhachevsky ideas for mechanizing airborne units led to extensive experimentation.**

Source: <http://www.combatreform.org/hitlerwantedtogoeastbutwewouldntlethim.htm>

The T-26 was first produced with two individual turrets, like the Vickers original. The definitive M1933 version had a single turret and a 45mm high velocity (760m/s) gun capable of both engaging tanks and firing a useful HE projectile (2,15Kg). It was therefore extremely well-armed for its time and role, following Tukhachevsky's dictum that all tanks should be capable of fighting enemy tanks. It was also easy to produce. 4801 were built between 1933 and 1937, of which more than half had radios. There were an additional 562 flame throwing versions and critically, and demonstrating another of Tukhachevsky's concerns, 65 bridge layers. The world's next largest tank force of the 30s, the French one, built 975 R-35 and 640 H-35, but only if we include all tanks built up to September 1939, and all the French infantry

tanks had low velocity guns useless for anti-tank work, lacked radios and had one man turrets. If we consider equivalent periods, the soviets out built the French more than five to one.

The T-26 was the basis for Self-propelled Guns (76,2mm) and Howitzers (122mm), providing a further step towards integral mechanization. The Soviets supplied the republicans with large numbers of T-26 tanks in the Spanish Civil War, where they proved vastly superior to the Italian and German light tanks in use on the nationalist side.

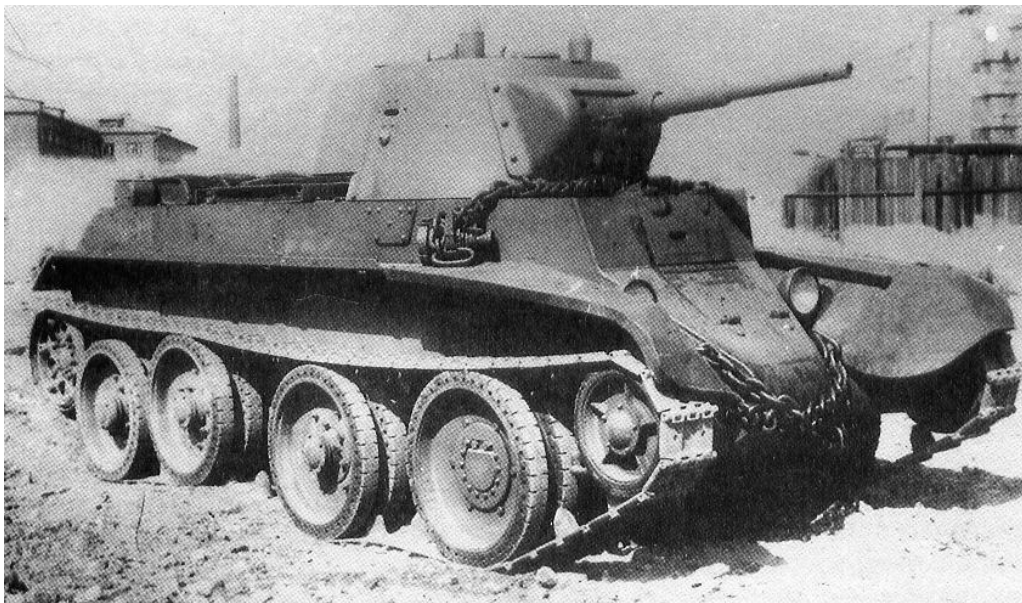


**Figure 5 A T26 model 1933 in winter camouflage**

Source: <http://ww2photo.se/tanks/su/ligh/t26/08634.jpg>

The BT-5 of 1933 and the improved BT-7 of 1935 were optimized for the fast tank role required by the Mechanized Corps and Cavalry Divisions. Armed with the same high velocity 45mm gun used in the T-26, the BT-7 model had a 450HP gasoline engine (later models had a diesel engine) that gave it a speed of 53Km/h on tracks. It was possible to remove its tracks and run it on wheels for faster deployment and longer range, in which case it could reach 73Km/h and had a 500km range. Half of them were equipped with radios, and they were also built in large numbers. 4212 were built between 1933 and 1937, including 155 “artillery” BT-7A versions with 76,2mm guns. Unlike the British close support versions of their tanks, kept at HQ troops and mostly used to lay smoke barrages, BT-7As were meant for use as direct fire weapons.

To place the BT-7 in context, let’s consider that the first British “Cruiser tank”, designed for a similar requirement, the A9, had a less capable gun (the 40mm two pounder), only 150HP, thinner armor and was built to the grand total of 125 tanks in the three years (1937 to 1939) it was in production.



**Figure 6 A BT7 tank, arguably the best tank in the world when it was introduced in 1935.**

Source: Fleischer, W 1999 pg 50

The medium tank role was assumed by the heavier T-28, a 25t tank with a 500HP engine and, initially, a short barreled 76,2mm gun and up to four Machine guns, two of which in small secondary turrets. The gun was replaced in the improved T28M by a longer barreled L-10 76,2mm gun with better antitank performance, and older tanks were retrofitted with it. Apart from the old fashioned use of secondary MG turrets (retained in British cruiser tanks up to the first Crusader model of 1941), the T-28 compares very favorably with its contemporaries. In line with Soviet options of mass mechanization, it was built in smaller numbers than the lighter models, but still in large quantities by international standards, 263 being built in 1933-1937. Bridge layer versions were also developed, and T-28s were tested with mine clearing roller devices before the war.



**Figure 7 A T-28 Medium tank**

Source: [http://www.militaryfactory.com/imageviewer/ar/pic-detail.asp?armor\\_id=345&sCurrentPic=pic1](http://www.militaryfactory.com/imageviewer/ar/pic-detail.asp?armor_id=345&sCurrentPic=pic1)

A soviet oddity was the development of very large heavy tanks, the 45 tons T-35 being introduced in 1935. A five turret monstrosity that, if fitted with a suitable hull, would make a passable gunboat, its greatest merit was that it gave the soviet industry experience with large, heavy tanks that paved the way for the latter KV-1 series. It also provided a suitable chassis for some experiments with heavy self-propelled guns.



**Figure 8 An early T-35 Heavy tank prototype on a parade in Leningrad in 1933. The “proletaires” mentioned on the banner must have been suitably impressed.**

Source: <http://englishrussia.com/2012/12/26/t-35-the-multi-turret-tank-of-the-red-army/>



Figure 9 The T-26 “family” of vehicles. From the top, left to right, SP AA Gun; Bridge Layer, SP Gun, SP Howitzer, Command Post Vehicle and Assault Gun. The Soviets introduced in the 30s the “combat team” concept adopted by the US in the 40s. This advanced concept was abandoned after Tukhachevsky’s death, and next generation tanks, such as the 1940 T-34 were not built according to this principle, assault gun and tank destroyer variants only being introduced in 1943.

Source: [http://www.armchairgeneral.com/rkkaww2/galleries/T-26\\_5.htm](http://www.armchairgeneral.com/rkkaww2/galleries/T-26_5.htm)



**Figure 10 A Su-14-2 152mm Self-propelled Gun. The soviets experimented intensively with self-propelled artillery in the 30s, including heavy weapons in corps artillery calibers.**

Source: <http://mtg.domek.org/rosja/su14.htm>

## 2. Warships

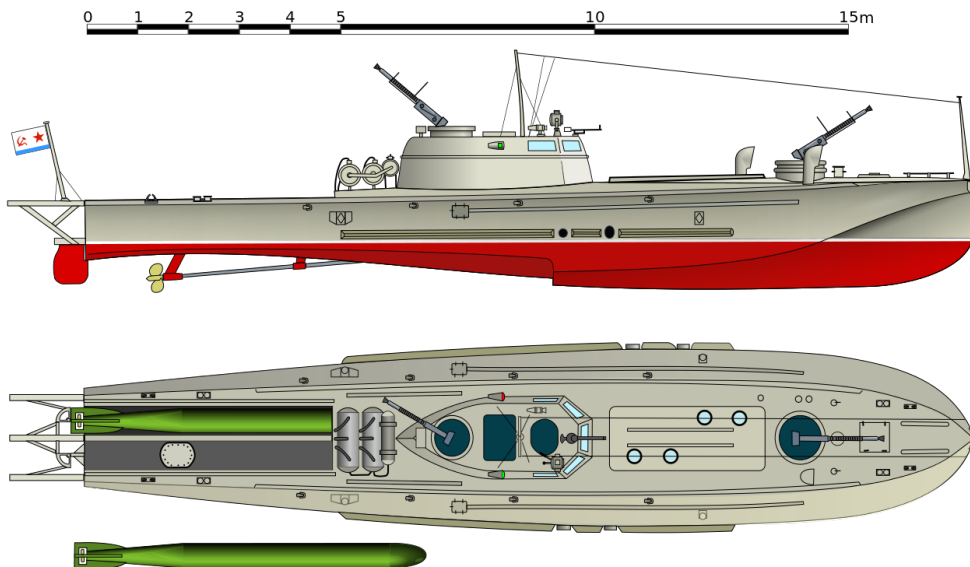
The naval concepts present in Tukhachevsky's writings follow the traditions of the French Jeune École, appropriately modernized. Regarding naval matters, it's important to keep in mind that Tukhachevsky expected the navy to play a secondary role in a future war between the USSR and the "bourgeois" countries and wanted to concentrate expense on the army and the air force (Rowher 2001). He claimed that both Russia and Germany had expended too many resources on their navies prior to WW1, a view that fell in line with Frunze's dictum that the USSR should have a defensive rather than an offensive navy. His assumption that the battleship was obsolete in the face of increased air threats, in particular torpedo bombers but also armor piercing heavy bombs seems obvious now, but was radical in the early 30s. The fact is that the soviet naval building programs followed his recommendations, concentrating in torpedo craft, submarines, and investing heavily on long range twin engine torpedo bombers. The requirement that led to the development of the Tupolev ANT-41 formulated in 1934 is similar to the one formulated by the IJN in 1935 that led to the Mitsubishi G3M torpedo bombers that sunk the RN Battleship HMS Prince of Wales and Battlecruiser HMS Repulse in 1942. The Tupolev aircraft was not produced, since after the crash of the first prototype (Gunston 2000) it was found out that the Air Force Ilyushin DB-3 bomber could be converted for the same role, the soviets as usual choosing the ease of production of an existing model over a new and specialized design.

After considerable initial difficulties resulting from the loss of technical expertise in naval construction during the civil war, compounded by Russia traditional dependence on foreign shipyards and suppliers, the navy started building new units in the late 20s. The emphasis

was clearly on submarines. The Soviets started with large minelaying submarines, using the British L.55 as a model, building six Series II 1000t minelaying boats. They then started building the Shchuka (Pike) 600t medium submarines, eventually building 75 of these boats between 1928 and 1936. They also built a large number of small coastal submarines of 200t, the M class, 50 units being built in the 30s. The soviet navy also procured larger, oceanic boats, beginning with the unsuccessful Pravda class of 1500t. They resorted to German cooperation for the Series IX boats, also known as the S Class. By the time Tukhachevsky was killed the first 3 had been built and an additional 9 of the improved Series IX bis had been laid down. They would prove to be the best Soviet submarines of the war, many more being built, along with large numbers of improved M and Shchuka boats (Miller 2002).

Apart from submarines the main effort was on mine warfare, most soviet ships being fitted for mine laying, and 18 400t minesweepers of the Fugas class being built in two series (Project 3 and Project 53) up to 1937. They proved excellent vessels, and many more were built and used for patrol and escort duties as well as mine warfare during the war (Preston, 1989).

Large numbers of motor torpedo boats were built. This were original high speed small boats of only 16t, the prototypes having been designed and built by TsAGI the Central Aerohydrodynamic Institute in 1932–33 from a concept by the great aircraft designer Tupolev.<sup>17</sup> Made of duralumin they proved corrosion prone and were only suitable for short range work



**Figure 11 A scale drawing of a Tupolev designed Soviet G-5 Motor Torpedo Boat.**

Source: [http://en.wikipedia.org/wiki/G-5-class\\_motor\\_torpedo\\_boat#mediaviewer/File:Lancha\\_G-5.svg](http://en.wikipedia.org/wiki/G-5-class_motor_torpedo_boat#mediaviewer/File:Lancha_G-5.svg)

<sup>17</sup> It achieved a maximum speed of 63.5 knots (73.1 mph; 117.6 km/h) during its trials in the Black Sea during 1933.

Comparatively few surface combatants were built in this period. Six large Destroyers of the similar Leningrad/Minsk classes were completed in the 30s, and cooperation with Italy led to the Project 7 destroyers, of which none was completed before 1938(Whitley, 2002), as well the two Kirov and four Maxim Gorky Cruisers, completed only between 1938 and 1940 (Whitley, 1999)

By Tukhachevsky demise the soviet navy was a leading force in submarines and long range torpedo bombers, a lead that was to be lost when after his death an ambitious program to build large surface combatants approved in 1936 by Stalin, and including theSovetskiy Soyuz class Battleships and Kronshtadtclass battlecruisers become a priority, (Rohwer, 1997 and Rohwer 2001)

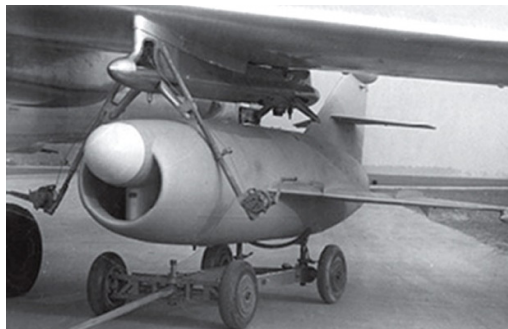
More than the large number of submarinesit is the proportion of submarines to surface warships and the reliance on land based aircraft that better demonstrates Tukhachevsky's influence on naval programs, as well as the speed with which the Soviet navy reverted to conventional Battleship centered programs after his death.

### 3. Aircraft

The USSR aircraft industry expanded rapidly in the late 20s and 30s. Starting with conventional designs and cooperation with foreign firms, the Soviets benefited from the work of, among others, two outstanding engineers, Polikarpov and Tupolev.

Polikarpov designed some of the best fighters in the world, such as the I-15, a tough, maneuverable biplane that proved a match for the renowned FIAT CR.32 biplane in the Spanish Civil War, and the considerably more modern I-16, the world's first retractable landing gear monoplane fighter to be mass produced. A world beater when it was first introduced in 1934 (Gordon 2001), the appearance of the more modern Bf-109E and Spitfire Mk.I, made later versions of the I-16 obsolete from 1939(Gunston 2000). A notable advance introduced in the I-16 Type 17 was the use of two wing mounted 20mm guns, giving it excellent firepower (Gunston 2000).

Tupolev produced large bombers, starting with the twin engine TB-1 and progressing to the large four engine TB-3, and his SB was the world first high speed bomber in widespread service, proving when introduced in Spain to be too fast to be intercepted by contemporary fighters(Gunston 2000). An interesting development was an early form of "standoff precision weapons" in the form of the Zveno combinations. A long range, but slow and vulnerable TB-3 bomber would carry two fast dive bombers (converted from Polikarpov I-16 fighters). At a safe distance from the target areathese would separate from the carrier aircraft, and perform a precision dive bombing of a high value target, before using their speed to escape interception. (Gunston, 2000)



**Figure 12 An SPB “parasite” dive bomber (left) and an AS-1 first generation cruise missile (right). The comparison makes the “standoff weapon” nature of the Zveno bombers clear in yet another example of 1930s soviet forward thinking.**

Sources: <http://aerostories.free.fr/appareils/compopara/I16SPB.jpg>

<http://www.ausairpower.net/APA-Rus-Cruise-Missiles.html>

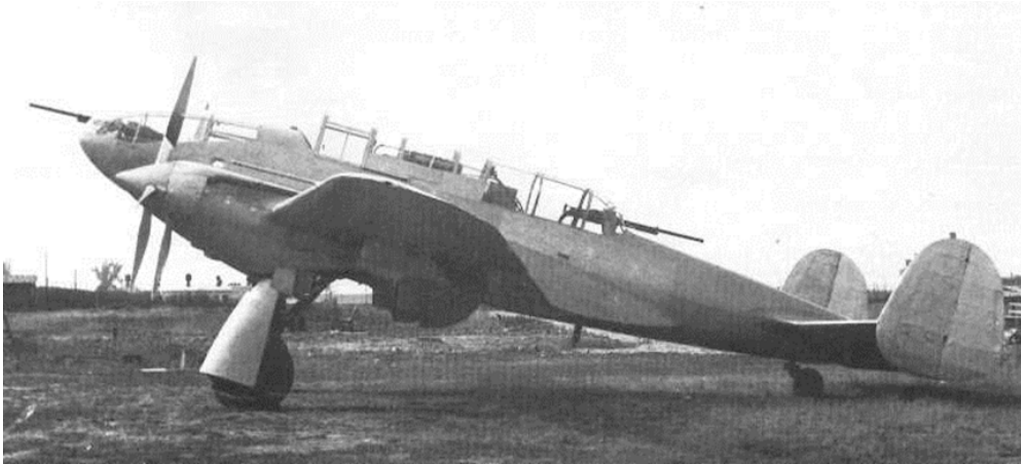
But if these developments were impressive, most of them were parallel to what was being done in other countries at a slower pace. Tukhachevsky’s influence on aircraft programs is better demonstrated by the Soviet practice of converting large numbers of Bombers for transport duties, the TB-1 becoming the G-1 and the TB-3 the G-2 transports, or by the extensive work done in developing auto-gyro aircraft, including attack versions that anticipate the later use of helicopters by the soviets as part of the deep battle concept (Gunston, 2000).



**Figure 13 A Kamov A-7 autogyro, the world’s first autogyro designed for armed combat missions, it could perform very short take off and near vertical landings. (Gunston, 2000).**

Source: <http://www.rcgroups.com/forums/showthread.php?t=2142620>

Another indicator is the development of specialized attack aircraft armed with high velocity anti-tank guns. This was abandoned after 1938, the Soviet Air Force opting for the simpler single engine Il-2. This was armed with conventional 23mm guns, but during the war a variant, the Il-2M3, was armed with two 37mm anti-tank guns, as specified in the 1936 requirement for the Polikarpov VIT (Gunston, 2000).



**Figure 14 A Polikarpov VIT-1 Close Air Support Aircraft of 1937. Armed with two 37mm high velocity guns, this was the world's first credible "Tank Buster" aircraft and was optimized for deep operations, illustrating the air mechanization concept.**

Source: [http://cyber.breton.pagesperso-orange.fr/urss/vit\\_1.jpg](http://cyber.breton.pagesperso-orange.fr/urss/vit_1.jpg)

### **Tukhachevsky's ghost: Bagration, August Storm and the triumph of deep battle.**

To western eyes the turn of the tide in the Russian Front was the decisive soviet victory at Stalingrad; the crown jewel in Marshal Zhukov's self-proclaimed (Zhukov, 2009) impeccable winning record. Since this was a battle fought according to western principles, the Germans being trapped by a classic double pincer in "Modern Cannae" mold that would have made Schlieffen proud, its undeniable relevance tends to mask the reality of events in Russia that winter (Glantz, 1997).

The great Soviet winter offensive of 1942 was a vast and complex plan that included four large offensives, known under the collective name of "the planets". The first two were Uranus which consisted of the encirclement of the German 6<sup>th</sup> Army at Stalingrad, executed simultaneously with Mars, another classic double pincer attack, with even stronger forces than those allocated to Stalingrad and led by Zhukov in person, to encircle the bulk of Walter Model's 9<sup>th</sup> Army in the Rzhev salient. They were to be followed respectively by Saturn, a strike towards Rostov (in another pincer movement) to finish off Army Group B and cut off

Army group A in the Caucasus, while at the same time Jupiter exploited the success of Mars to complete the defeat of the German Army Group Center (Lopez, 2013).

The plan was grandiose in scale, purely Napoleonic in style, and far from successful. Uranus was a greater than expected victory, trapping a considerable larger force than the Soviets had expected, but an energetic and swift German response forced Saturn to be down sized to the appropriately called Little Saturn. Mars was a total failure and consequently Jupiter was never started. On simplistic terms, one win, one draw, one loss, one non start. And even though the Russians might not openly acknowledge this, Model had shown just how strong the Germans were on the defensive, and the possibility that if the 6<sup>th</sup> Army had been led by someone of his caliber, rather than the much less capable Paulus, Uranus might have failed could not be discontinued. Shortly afterwards, von Manstein was to give the Russians another strong warning with his victory in Kharkov. Clearly, beating the Germans at their own game was not going to be easy. It was time to go back to Tukhachevsky.

1943 was a year of learning for the Soviets. They won the huge battles fought at that year, but at a terrible cost, Russian casualties being considerably heavier than those of the Germans. They kept improving, and getting closer to the deep battle concepts, and in June 1944 they were finally at a level that allowed them to dictate the rules of the game.

Bagration was the World War Two “Black day of the German Army”. Since the Soviets held a large salient in the Ukraine the Germans naturally assumed they would use it to launch a “scythe” across the rear of their forces. Instead the Soviets attacked Army Group Center in Byelorussia head on, using the Deep Battleoperational model. They engaged the enemy in its entire operational depth from the very beginning with a combination of air attacks and extremely well-coordinated massive actions by unconventional forces. The Germans recorded 14.000 actions against the rear areas of Army Group Center in a single night as preparation for the offensive, of which 10.000 were successful (Simpkin 1987). They assaulted the German lines with tank supported infantry forces backed by tremendous artillery fire power and immediately deployed their tank corps to penetrate the German defenses in a textbook “development echelon” mode (Zaloga 1996). Army Group Center was overwhelmed in its entire operational depth, and no elastic defense, of the type later claimed by Manstein to have been the solution to beat the Soviets could be contemplated (Aubin 2012).

Bagration was a devastating shock for the German Army. 17 Divisions were totally destroyed. They had lost 350.000 men, of which 150.000 were prisoners of war. An entire Army Group had been annihilated, and the most devastating fact was that Soviet casualties had been about half those of the Germans (Zaloga 1996).

And in adherence with the Successive Operations theory, Bagration was followed by a series of offensives that led to regime changes in Germany’s Allies that were to bring to power, fulfilling the Leninist concepts of using military operations to turn “imperialist war to civil war”, communist governments. (Lenin 1977). Even in Nazi Germany a few officers tried to kill Hitler in 20 July, as Bagration was closing to an end. Germany was not to fall into civil

war, rather fighting to the bitter end, but then again Nazism was not the kind of capitalist imperialist government Lenin had considered in his studies.

Hitler used to bang his fist against the situation chart in OKW and shout that “The Russian is dead”. He wasn’t counting on having to fight a ghost.

But having demonstrated what Deep Operations could do against a first class Army, the soviets were soon to show just what they could do against a lesser one. When the USSR entered war against Japan in 1945, it fell on Marshall Vassilevsky, one of the few graduates of the first class of the General Staff Academy to have survived the purges, to conduct a devastating offensive against the Japanese Kwantung Army. Despite the tenacious resistance of the Imperial Japanese Army forces, the Soviets totally defeated an army of 713.724 men in seven days of combat and while sustaining only 32.000 casualties. In Okinawa, the US sustained 49.000 casualties and took three months to defeat a force of 117.000 Japanese soldiers (Glantz 1983). Given the nature of the area of operations, a more appropriated comparison might be made with the Philippines campaign, where the US forces needed ten months, and 60.000 casualties, to defeat a Japanese force about half the size of the one the soviets destroyed in a week. The Soviet Manchuria campaign, codenamed operation August Storm, was an impressive demonstration of the potential of deep battle.

After a period in the 50s and early 60s when doctrine was conditioned by nuclear weapons, the deep battle concept reemerged as the basis for the soviet doctrine in the late 60s, early 70s, the soviets adopting late world war two operations as models, especially Bagration and August Storm. In turn, NATO studies on how to fight the soviet threat were to lead to the recognition of the operational level and to the adoption of a deep operations model, with the Follow on Forces Attack studies and the introduction of the AirLand battle concept (Glantz, 1991).

### **Conclusions. One greater than Guderian?**

Returning to the questions formulated at the introduction, it is now possible to reach conclusions.

The armament programs implemented by the USSR in the 30s follow Tukhachevsky concepts too closely for his influence to be denied. The Soviets built tanks that were tailored to his doctrine of deep operations, and built them in quantities that show that his concepts were being adopted throughout the Army. The extensive work on engineer tanks, such as bridge layers, the work on self-propelled artillery, and particularly the development of airborne forces and the effort devoted to providing them with air deployable armored fighting vehicles fit perfectly with his 1931 vision of airmechanization. The development of the air force, with such advanced concepts as “tank buster” aircraft and its articulation on a tactical Air Force geared for support of in depth operations and an independent air force with heavy bombers show this his appointment as Technology and Armaments Department Director carried real power. It is also relevant that after his death some programs simply stopped. There were no

bridge layers or self-propelled variants of the T-34 when it was introduced, for example, and the Petliakov Pe-8 heavy Bomber that was meant to replace the venerable TB-3 was only built in small quantities.

After his death the large mechanized and airborne formations were dissolved, the navy reverted to a program centered on large surface combatants and the doctrinal focus was lost. Far from being just an isolated theorist as portrayed by Liddell Hart (Neveh, 2001), he was both the brains and the driving force behind the Soviet Armed Forces modernization program of the 30s.

His intellectual success can be best judged by how close his visions of modern warfare corresponded with actual events in World War Two and by the success the soviets obtained when they reverted to his model. Tukhachevsky's vision of war with Germany as the aggressor, as he predicted in 1935 (Neveh2001), being decided by massive mechanized armies employing combined arms and reflecting their nations productive capability was fulfilled to the letter. His 1931 predictions on the importance of having antitank capable guns on all tanks and on the vulnerability of rail transport to air strikes, as well as on the importance of air supply, were to be extensively demonstrated during the war.

His views on naval warfare were to be vindicated on all fronts, from the threat that long range torpedo bombers represented to battleships, to the importance of submarines and the intensity of small craft combat in coastal waters, and in the limited role the Soviet Navy was able to play in defeating the Nazi threat.

The value of his deep battle concepts were amply demonstrated, not only because they allowed the Soviets to beat the Germans, something they had done with conventional tactics in 1941/1943, but to beat them with favorable casualty rates.

His relevance was amply demonstrated when, after the post war period when the nuclear factor dominated military thinking, the soviets brought back deep battle theories in the late 60 and 70s, perfecting the Development Echelon into the Operational Maneuver Group, a move that forced a rethinking of NATO doctrine that culminated in the Air-Land Battle 2000 concept, Air-Land being essentially NATO speak for Airmechanization (Simpkin1987), yet again demonstrating that imitation is the most discreet, but most sincere, form of admiration.

One further area of study that attracted our attention while researching the development of soviet military theory is the need to study in greater depth the influence of the Allied World War One operations of 1918 on the Soviet military Theorists. Most authors have, while citing Tukhachevsky's works on the History of the Great War, not explored the clear parallels between the broad front/Successive operations Soviet concepts and the allied offensives in 1918. This is a field we feel should be extensively studied, something that we were yet unable to do while working on the present article.

Which leaves us the central question, was Tukhachevsky "One Greater than Guderian"?

The attentive reader will have noted by now that there is no question mark at the end of this article title. The German model did have one advantage over the Soviet one, which was its incorporation of Auftragstaktik, a command mode that has now been accepted as superior.

But we can hardly blame this on Tukhachevsky, who came very near to advocating it in his writings, as far as a Marxist-Leninist could, maybe too far, considering his fate. On the other hand the Soviets mastered the operational level of war, while their German contemporaries didn't.

Let's compare them using the old last ditch resort of any military historian, a sports metaphor.

In tennis there are Winners, when you make a play so good that it's impossible to beat, Forced Errors, (when you push your opponent into making mistakes) and unforced errors (when your adversary just plays badly). Good players make few errors and push their opponents into forced ones. The best players triumph by delivering winners reliably.

The Soviet Deep Battle model delivered winners against an opponent that was reputed to be the best in the world at the time. The German Blitzkrieg depended on its opponent's mistakes, forced errors at best, often unforced ones, to win.

Picking up from Frunze, Tukhachevsky led a very innovative group of highly intelligent officers and he created an extremely advanced military model that surpasses Fuller in inventiveness, Liddell Hart in boldness and Guderian in thoroughness. When one compares the Red Army of the Civil War with the powerful Soviet Armed Forces of 1937, and considers the modernity of the 1936 Soviet field regulations, the scope of Tukhachevsky's achievements becomes clear and his claim to recognition as the most remarkable military thinker of the XX century becomes evident. He was, indeed, greater than Guderian.

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