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On the Road to Modern War

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The Great War was never considered the "war to end all wars" by the states and armed forces in conflict. The war's legacies were processed in a wide variety of ways depending on forms of government, geostrategic situations, moral/material capacities, and public will. Their common denominator was recognition that successful future war-making depended on a synergy between an effective government and a strong citizenry.

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The First World War Experience

To understand how the Great War looks forward to developments in future conflicts, it is necessary to understand four defining aspects of the war itself. First, it was the last war to prioritize the concept of mass. Since the Napoleonic era, war across the globe had been increasingly an affair of numbers and numerical calculation. The exponential growth in the size of armies and fleets was only the tip of an iceberg that included the consideration of economic statistics, votes in parliaments, and citizens working in fields and factories. The aphorism that amateurs discuss strategy while professionals talk logistics had its birth in the 19th century. The heroic vitalism of earlier eras did not disappear but was seen more as the cutting edge of a massive blade, built from the entire material and moral resources of a state and its people. In this context, professional military literature stressed the inexorability of statistics and the need to understand their importance in a conflict that would not end quickly.[1]

In that context what has been described as the "short-war illusion" was becoming the short-war desire. Even the German general staff was moving towards consideration, and acceptance, of a conflict of the *longue duree*. Among an increasing body of professional military literature expressing the same idea, the work of Sir Ernest Swinton (1868-1951) stands out. *The Green Curve and Other Stories*, published in 1909, focuses on the inexorability of statistics - the "green curve" of the title story - and on the need to understand and accept this rather than rail against it.[2]

World War I was further structured as a mass war by two technological factors. Most familiar is the drastic imbalance in the operational triad of mobility, protection, and firepower. What had begun with the introduction of gunpowder a more or less proportional three-way interaction became by 1915 overwhelmingly firepower-dominated. *Virtù,* whether expressed as courage

or cunning, correspondingly took second place on the battlefield to weight of shells and number of bodies. As the scale of war making increased, command and control also failed to keep pace. Real-time information was, for practical purposes, impossible to obtain or process in any systematic fashion. The result was an increasing emphasis on planning and a constant rethinking of those plans when in contact with the enemy.

Gridlock during World War I was exacerbated by the unusual symmetry of the armed forces involved. Not since the middle of the 18th century had like confronted like to such a degree across lines of combat. The Great War's symmetry, moreover, was institutional rather than societal. It had been facilitated by the intensified competition among armies and navies in the context of open societies where comprehensive information on one's neighbors was available to a previously unknown degree.[3] The result was mutual homogenization. Translated to the battlefield, this produced a war of nuances, of seeking small advantages which somehow might become decisive.

Gridlock and symmetry combined for a third defining characteristic of World War I: flexibility.[4] Neither C.S. Forester's (1899-1966) image of people who seek to remove a screw by direct force nor the more familiar trope of "lions led by donkeys" describes the combatants who, almost from the beginning, were constantly modifying doctrines, weapons, and machines in a desperate collective effort to shorten a metastasizing conflict. Flamethrowers, gas, submarines, all were seized upon as potential saviors. Improved aircraft reached the front in six-month cycles: the dominant fighter of spring 1917 was a flying target a year later. Additionally, while the British Mark I and Mark V tanks shared the same rhomboid shape, their interiors were only cursorily similar. Technological possibilities were nevertheless limited by objective factors. To cite the most obvious example, the internal combustion engine was in its first stages of development and its horsepower was too limited to restore mobility or enable protection. Tanks remained underpowered, aircraft fragile, and trucks prone to breakdown.

Armed forces arguably adjusted institutionally even more than technologically to the triple challenges of stagnation. Cavalry were turned into infantry. Flash and sound ranging and air observation did not merely revolutionize artillery fire direction. They made gunners obsessed with horses in 1914 into scientists and mathematicians by 1918. Control was simultaneously centralized and decentralized according to specific circumstances. Artillery and air assets became corps and army responsibilities, while the basic tactical unit devolved first to the platoon and, by late 1918, to the squad or section: a dozen men with an organic light machine gun plus hand and rifle grenades.

Turning to secondary theaters, in Mesopotamia the British responded to the terrain and climate by motorizing almost all of their rear-echelon transport. In Palestine, aircraft was teamed with horse cavalry supported by machine guns during Edmund Allenby's (1861-1936) final campaign in 1918. In Romania the Germans employed a rudimentary motorized battle group with good effect in 1916. At sea, the substance of naval war changed as aircraft were given anti-submarine or reconnaissance roles. By November 1918, the Royal Navy added attack to the mission menu and introduced the first aircraft carriers.

On the operational level, the British made the most significant contribution to future wars by developing the first modern combined-arms team: a doctrinal, institutional, and technological synergy among infantry, artillery, tanks, and air power, coordinated by radio systems. The artillery sealed the flanks of an attack, conducted counter battery fire against German gun positions, and provided an initial creeping barrage. Within the "artillery zone" the tanks sought targets of opportunity while the infantry probed for soft spots, each supporting the other as needed. Aircraft provided reconnaissance, artillery observation, and increasingly, ground support. By August 1918, the Tank Corps had an RAF squadron attached.[5]

The complex interaction of these forces could not be controlled in any modern sense with the communication technology of 1918. Radios, still bulky and unreliable, were impractical below brigade level. Operations could be monitored and regulated to a degree that it is legitimate to speak of the evolution of the "semi-managed" battle. Attacks were increasingly able to move forward in a lurching progress that grew steadier with practice. It is similarly appropriate to speak of a "semi-mobile" battle, with men, vehicles, and firepower pushing back the German front as opposed to rupturing it. Neither the tactics nor the technology of 1918 was quite up to breaching even improvised defensive positions at acceptable cost. What they could do was maintain a steady pressure that compelled an eroding German army to fall back steadily until its despairing generals demanded that the government sue for peace rather than risk an all or nothing end game on German soil.

Even in the war's final stages method and technology could not significantly reduce casualties. They could only improve the ratio of gains. This point segues into a fourth, and wider, defining aspect of World War I: its semi-modern character. The "classic" Great War, the war of myth, memory, and image, could be waged only in a limited area: a narrow belt in Western Europe,

extending vertically five hundred miles from the North Sea to Switzerland, and horizontally about a hundred miles on either side of the front line. German operations in Russia and the Balkans during 1914-1915 depended heavily on technology as a force multiplier and were consistently frustrated by technology's limits in an eastern context.[6] Heavy guns were handicapped by the problems of moving them in the absence of paved roads - or any roads at all. Rapid-firing small arms required large-scale, predictable resupply that was not always forthcoming. Aircraft effectiveness was limited by short range, mechanical fragility, and poor bombs. Nor does it denigrate the Palestine campaign of 1918 to note that the British victories were achieved against an Ottoman opponent already eroded at all levels.

War waged outside of northwest Europe tended to follow a pattern of de-modernization[7] Peacetime armies and their cadres melted away in combat, were submerged by repeated infusions of unprepared conscripts, and saw their support systems disintegrate. Russia, the Balkans the Middle East and East Africa offer a plethora of case studies ranging from combatants left without rifles in Russia, to the breakdown of British medical services in Mesopotamia, to the dismounting of entire regiments in East Africa by the tsetse fly. De-modernization was not confined to combat zones. Russia, Austria-Hungary, the Ottoman Empire, and, arguably, Italy strained themselves to the breaking point and beyond in coping with the demands of an enduring total war. Infrastructures from railways to hospitals to bureaucracies that had functioned reasonably if not optimally, saw their levels of performance tested to destruction. Stress combined with famine and plague nurtured catastrophic levels of disorder, from the Armenian genocide to the Bolshevik Revolution.

Semi-modernity, in short, posed a fundamental challenge to the wartime relationship of armed forces and governments. In 1914, for practical purposes, the warring states turned over control to the generals and admirals. This partially reflected the general belief in a short, decisive war. It also reflected civil authorities' lack of faith in their ability to manage war-making's arcana and a corresponding willingness to accept the military as "competent by definition." The extended stalemate that actually developed had two consequences. A major, unacknowledged subtext of thinking about and planning for war prior to 1914 was that the future conflict would be so horrible that the home fronts would collapse under the stress. Instead, by 1915 generals and politicians were able to count on unprecedented and unexpected commitment from their populations. The precise mix of patriotism, conformity, and passivity underpinning that phenomenon remains debatable. Still, it provided a massive hammer. The subsequent question was how that hammer could best be wielded. In Russia, Austria-Hungary, the Ottoman Empire, neither soldiers nor politicians were up to the task. In Germany the military's control grew after 1916 into a *de facto* dictatorship contingent on a victory the armed forces could not deliver. Beginning in 1915 in France and Britain, civil and military authorities came to more or less sustainable *modi vivendi* that endured to the armistice. It became clear that the war's true turning point for any state came when its people could no longer support the actions of its government. From there, it was only a matter of whose clock ran out first.[8]

Processing Catastrophe: Russia

World War I thus created and left unsolved two fundamental questions. How could the next war be fought so as to avoid stalemate and the perception of stalemate? How could public support for that kind of an extended, demanding conflict, best be generated and sustained? The nature of future war now required consideration in two contexts: the operational and the structural-ideological. Post World War I military systems and nation-states developed significantly different approaches to both questions.

The Soviet Union (USSR) and its Red Army offered the most comprehensive response. The USSR itself was fundamentally a product of World War I. From a Marxist/Leninist perspective the fratricidal struggle of the capitalist world order had facilitated the inevitable process of proletarian revolution. But "the cunning of history" had enabled capitalism to survive, albeit mortally wounded. This meant that survival of the war was not a contingency but a given for the Soviet Union. The external class enemy, the capitalist states surrounding the USSR, sought its destruction from their own objective dynamics. Preparing for war was thus a pragmatic imperative and the Soviet model was total war waged in ideological as well as operational contexts. Such a conflict involved overcoming hostile armies and internal enemies, "deviationists" and "wreckers." Victory meant not only furthering Soviet progress towards Communism, but also fundamentally transforming previously-hostile societies as well.

This kind of victory also required a fundamental transformation of the Russian people. From its early revolutionary days, the army had been seen and projected as a major instrument for creating the "New Soviet Man." Free from the snares and delusions of the past, this archetype was to be materialist and collectivist in his essence, ready to sacrifice himself eagerly for the Soviet

system and for Communist ideology. Military service would facilitate and concretize this transformation while simultaneously creating an instrument of war and revolution that would showcase Soviet power and deter Soviet enemies.

Reality was more pedestrian. Initial concepts of building the army around a core of class-conscious proletarians foundered during the industrial expansions inaugurated by the five-year plans that began in 1925. Conscript intakes were increasingly composed of peasants, poorly educated and with negative cultural memories of military service under any system. The result was a culture of minimal compliance: the antithesis of ideological hopes and expectations. The officer corps was significantly informed by a sense that a commission was a route of upward mobility in the Soviet order. Joseph Stalin's (1879-1953) purges in the 1930s may have removed fewer than 10 percent of officers but the resulting diminishing of rapport and confidence only exacerbated the disconnect between the conscripted lower ranks and the Soviet system.

In a wider context, however, the Red Army was part of a developing "warfare state," a comprehensive system functioning on a Hobbesian basis of all against all. The Great Depression did not change Stalin's mind. Capitalism in its death throes might be even more willing to undo history by turning its armed forces against the USSR. However intensely managers, soldiers, and officials might dispute specific details, the assumption of isolation in a mortally hostile world remained unchallenged. Stalin's USSR was a society organized for violence with a steady erosion of distinctions and barriers between military and civilian spheres. Moderation in defense planning was literally criminal. Political language was structured around military phrasing. Culture was militarized in preparation for a future revolutionary apocalypse. Absolute social control and iron discipline prefigured and replicated military life. The human results may not have been what Soviet ideologues expected. They nevertheless proved a viable foundation for the vision of a society militarized in the name of global revolution.[9]

On the operational side the interwar Red Army achieved an unmatched synergy between mass and mechanization. The Soviet system's legitimating ideology of Marxism-Leninism defined war as a science. Its principles, systematically studied and properly applied, enabled the anticipation of the consequences of decisions, behaviors, even attitudes. A rising generation of technocrats saw the Soviet Union's military future in terms of mass mechanized armed force. Mikhail Tukhachevsky (1893-1937), appointed Deputy Commissar for Military and Naval Affairs in 1932, was the focal point of a school of thought arguing that mechanization vitalized and extended revolutionary war. A technologized mass army could export Communism as well as defend it. "Reluctant soldiers" would be transformed into enthusiasts by experiencing directly what the Soviet Union could do to its enemies. They would become part of a new proletariat, able to make optimum use of the military technologies created under Communism.

In the mid-1920s instructors at the Red Army Military Academy described the total destruction of enemy forces by a series of "deep operations:" shock armies for breakthrough, mobile echelons for exploitation and pursuit. Under Tukhachevsky, "deep battle" became a comprehensive doctrine that included air-supported, fully mechanized mobile groups taking the fight into the enemy's rear at a rate of twenty-five or thirty miles a day. By 1938 the Soviet order of battle included four tank corps and a large number of tank brigades, numbers unmatched anywhere in the world. In November 1939 these formations were disbanded. The reason given was that the Spanish Civil War had shown the vulnerability of tanks while large armored formations had proved difficult to control in practice. Underlying these operational justifications was Stalin's concern that the armored force posed a potential domestic threat.[10]

The bill for that near-fatal decision would come due in installments from 1941 to 1943. The Red Army nevertheless entered World War II structured and informed by the policies and mentalities introduced after 1917. Operationally, it synergized mass and mechanization. Domestically, it was a primary instrument of socialization into a permanent state of warfare. And politically it accepted subaltern status in the state apparatus in return for government support of military spending at the expense of civilian production, balanced budgets, and economic modernization.

Lessons Learned: Germany

After 1918 the USSR offered the most comprehensive, best integrated response to the challenges of future conflict. In Germany, the Great War's legacies were understood in a similar context but with an initial focus on the "lesser world" of military operations. The post-Versailles German army knew precisely what it wanted: a program of changes that would enable it to refight and win the war. Erich von Falkenhayn (1861-1922) in 1916 and Erich Ludendorff (1865-1937) in 1918 had planned their offensives to force France and the Allies to negotiate. In both cases the enemy withstood the shock of tactical defeat and the Germans were unable to make a successful transition to the operational level.[11] Thus, in 1918, the vaunted stormtroopers

broke open Allied lines but exhausted their bag of tactical tricks and then themselves. The specially prepared and trained "attack divisions" were bled white as allied railroads and trucks reinforced sectors before the Germans could advance through them on foot. The cavalry, which the British offensives of 1918 showed could still play a useful if limited role in semi-mobile operations on the Western Front, were in the trenches as "Cavalry Rifle Divisions."

Hans von Seeckt (1866-1936) was the major engineer of the response. He emphasized a return to the Prussian tradition of quick, decisive victories. This meant challenging the concept of mass, the immobility of which meant it could only crush by sheer weight applied over an extended period of time. Seeckt challenged the argument that egalitarian comradeship and heroic vitalism, the often-lauded "front experience," could enable transcending modern high-tech war.

The fundamental reconfiguration of future military strategy was also a function of necessity. No one inside or outside of Germany seriously believed the Weimar Republic could defend itself or influence its neighbors with the armed forces at its disposal. The Versailles Treaty limited the army to 100,000 men without armored vehicles, heavy artillery, or aircraft and rendered Germany's military position in the west hopeless in any conventional conflict. To the east, in the case of war against Poland and Czechoslovakia, prospects existed for the diplomats to buy time or the League of Nations to work a miracle. Neither contingency was likely in a real-world scenario. Seeckt's response was to create an army able to fight and win when outnumbered. While there were plans for its eventual expansion, the *Reichswehr* was not intended to be a cadre for national mobilization. The aim was to enlarge and enhance the existing force, not to submerge it in a mass only able to replicate the conditions of the Great War. Seeckt that insisted the *Reichswehr* control the battle by taking the initiative and forcing encounter battles - *melées* in which training and flexibility had a chance to compensate for numerical and material inferiority.

This was by no means an abstract vision. However, only at the beginning of the 1930s would the technology of the internal combustion engine begin to fully enable the material speed and reliability ultimately, if indirectly, evoked by Seeckt's concepts. The *Reichswehr* made the best of its political and material circumstances by emphasizing human skills while simultaneously monitoring foreign development in internal-combustion warfare. As early as the mid-1920s the concept of using tanks not only in masses, but also as part of a comprehensively motorized force was percolating in theoretical literature, service schools, and military offices. Such combined arms formations would not be confined to the tactical sphere as in 1918. They could move to war's operational level, enabling initial surprise, continuing envelopment, and a final, finishing blow against the enemy's flanks and rear - the moves that had eluded the Germans a decade earlier.

By 1927 the *Reichswehr* was preparing training schedules for theoretical tank regiments. *Reichswehr* observers reported in detail on British mechanized maneuvers. The motor battalions, initially configured to haul supplies and transport senior officers, were becoming testing grounds for exercises built around dummy tanks and wooden antitank guns. Agreements with the Soviet Union allowed Germany to establish instructional facilities for aircraft, armor, and chemical warfare development in the USSR. In the early 1930s war games became increasingly theoretical, postulating artificial political conditions for testing purposes. The general conclusion was that quality enhanced by technology could indeed overcome numbers.[12]

From the soldiers' perspective, national renewal ultimately depended on the regeneration of the army, whatever its eventual form. That regeneration required national unity based on military purpose, military service, and ultimately the militarisation of German society. The form of government enabling these developments was not of central importance. While the *Reichswehr* refused to identify directly with the Weimar Republic, it was not a coup waiting to happen. The soldiers learned to work with the new civilian government. The soldiers appreciated the administrative and financial benefits of Weimar's centralised political power and cultivated relations with diplomats and industrialists at levels unprecedented in the Second Reich. Wider issues of cultural and spiritual rebirth did not deeply engage the *Reichswehr's* attention

The Nazi seizure of power inaugurated a synergy of operational and ideological perspectives. The military's goal after 1918 was to create a force able to achieve quick operational and tactical results. The Third Reich's aspirations after 1933 resulted in a mass army vitalized by a technocratic core. Such central principles as courage, comradeship, and conformity were central to both army and party.

Victors' Dilemmas: France

Germany and the USSR responded to World War I in operational and ideological contexts. France took a managerial perspective. The Great War was for France an object lesson in the danger of wishing: the wish might be granted. After 1918

France was once more clearly Europe's primary power with no serious challenger on the horizon. In that context the war was not generally perceived as futile and certainly not senseless. Victory's price was another matter. Despite its demographics, natural resources, and industrial potential, France emerged from the Great War with neither the material nor the moral wherewithal to solidify that position.

At the same time neither the politicians nor the soldiers were willing to alter the parameters of France's security system. That system embodied a sober, realistic foreign policy. Direct diplomacy, regional alliances, and international cooperation through bilateral negotiations or in the context of the League of Nations - all were employed singly and in combination to maintain the post-1918 status quo.[13] France also based its security on its own resources. Between 1918 and 1939 France devoted a greater portion of its gross national product to its military than any other great power. Funding, however, was only the tip of the iceberg. Post-war France proposed to develop its national capacities, moral and material, to a level superior even to that demonstrated in1914 and to do so without sacrificing republican values and institutions. Instead of ideologically based collectivism, French cohesion reflected, in principle at least, "Ca fait d' excellents Francais." A song made popular in 1939 by Maurice Chevalier (1888-1972), it humorously celebrates the apparently entropic diversity that ultimately produced "excellent Frenchmen, excellent soldiers."

The key principle was management. During the 1920s, successive governments established a series of high-level military-civilian commissions to oversee and overhaul systems of economic mobilization, resource allocation, and strategic planning. In the 1930s these developed into a comprehensive ministry for national defense and comprehensive legislation for national organization in wartime. The empire supplied troops permanently deployed in France even in peacetime on a hitherto unmatched scale.

Management informed military planning as well. The armed forces accepted subordinate status in a parliamentary republic that was committed to a national-service conscript military and valued loyalty above brilliance in its generals. The result was a refining of processes rather than a reconsideration of parameters. By 1945 the successful combatants, the US, Britain, and the USSR, were predicating their tactical doctrines and operational art on overwhelming fire-power - entire corps and divisions of artillery in the Red Army and the British use of tank chassis with the turrets removed to move infantry forward. The Maginot Line was not developed as an instrument of passive defense. It was designed to fulfill a "social contract" of protecting French territory and people, to secure the vital raw materials in the Metz-Strasbourg-Verdun triangle, and to serve as an economy of force measure enabling maneuver in other sectors.

As early as 1924, French war plans projected an immediate, large-scale invasion of Germany. But how was that to be implemented? The French response was "managed battle." This was not merely an extension of the "semi-mobile" operations of the British Expeditionary Force (BEF) in 1918. Managed battle was a top-down process predicated on concentrating artillery fire and air support to enable the advance of infantry supported by armor. The light mechanized divisions organized in the 1930s did not differ in structure from their panzer counterparts but their mission was to screen rather than to penetrate and exploit. The pace of battle might be that of the foot soldier but the process would be steady. It would not make excessive demands on the mobilized reservists who would be responsible for every aspect of its implementation and who were no longer expendable in the fashion of their Great War forebears. Not only the army but France itself was hypnotized by the "hollow years," by the fathers who never returned and the children they never conceived. "Managed battle," moreover, was conceived in a context of a grand strategy that would debilitate Germany by diplomacy, blockade, and air attack while French soldiers took the field and carried the fight to the enemy.

France's problem with this plan lay in implementation. Materially, for example, communications technology was neither sufficiently developed nor sufficiently understood by the French army to control a managed battle. Tactically, most French tanks lacked radios. Operationally, telephone lines and messengers played central roles that proved unsustainable in 1940. The peacetime army was conceived as a framework and trained short-service conscripts. Its cadres spent their time on fundamentals and administration, a "tyranny of routine" with preparation for combat neglected and republican *élan* expected to compensate.[14]

French interwar concepts did closely approach the eventual norm of future war. By 1943 at the latest, *Blitzkrieg's* days of magnificent inspiration were at an end against a reasonably competent enemy. Anti-tank defenses constrained armor's tactical flexibility. Strategically, World War II was decided by national mobilization applied by effective management. Rather than being behind the curve of understanding future war, France in 1940 may have been ahead of its time. It was, however, definitely out of phase.

In 1940, France faced a situation not experienced during the Great War. It confronted an asymmetrical enemy which succeeded in getting inside the French information/decision loop. As a result, French leadership at all levels had to abandon method for improvisation and was unable to gain the initiative and impose *its* war matrix.[15]

Victors' Dilemmas: Great Britain

Great Britain prepared for future war in the context of its experience of the Great War experience with denial and a rejection of its paradigms. The political trope of "no major war for ten years" was intended to control expenses rather than planning, but its influence was far wider. The human costs of Britain's war arguably produced the greatest cultural shock of any among the major combatants. Nothing resembling a precedent for such a loss of life existed. Even the Napoleonic Wars had been waged by a small segment of the population with limited national involvement. Commemoration and mourning were not exclusively British responses, but the processes bit more sharply and were manifested in more comprehensive public and personal terms than anywhere else. This did not mean that the war was processed as meaningless. British monuments commemorated not disillusion but loss and sacrifice.

After the war, Great Britain did not reconfigure its paradigms of military and political policies. After 1918 as before 1914, both were developed in the context of a dialectic between European and imperial responsibilities - both to be fulfilled at minimal expense, neither one expendable. The Great War had demonstrated that Britain's survival as a great power depended on its global connections. However, due to increasing institutional costs and the restrictions on force structure imposed by the interwar naval limitation treaties, the Royal Navy was spread butter-thin. The army faced unfamiliar challenges imposed by the mandate system, particularly in Palestine and Iraq. On India's northwest frontier, tribal armaments and politics were growing more sophisticated. In the age of Mohandes Gandhi (1869-1948), internal security was no longer just a matter of crowd control. Closer to home, from 1919 to 1923 the Irish Republican Army conducted the first modern insurgency. And the skills acquired at Aldershot or during the Hundred Days of 1918 were now only marginally applicable beyond the Khyber Pass or in deepest County Cork.

Britain never seriously considered a return to the "splendid isolation" of the previous century[16] That meant preparing for conventional war on the European continent. Effective preparation involved accepting a high-tech matrix. On one level the Royal Air Force might have been expected to take the lead here. It was modern and technical. Its perception of strategic bombing as potentially decisive both morally and materially in a future war made it a logical instrument of power projection - and an even more promising means of waging war at minimal cost to British lives. But the Royal Air Force (RAF) did little to implement its doctrine. The embryonic strategic air operations of 1917-1918 had provided a check list of issues to be studied after the war: day versus night conditions, target acquisition, bombing accuracy, aircraft survivability. None were fully addressed as technological solutions were still in the development stage and financial constraints limited experimentation. Ultimately, the RAF's mind-set was "things will work out when they have to work out."[17]

To understand the roots of this mentality it is necessary to turn to the ground forces. Far from demodernizing *de facto*, as alleged by critics, the interwar British army developed a reasonably high level of consensus on modern warfare's nature and demands. The debates between supporters of armored war like J.F.C. Fuller (1878-1966) and such advocates of more general mechanization as Sir John Burnett-Stuart (1875-1958) were a matter of distinctions rather than dichotomies. In more practical terms, the army's mechanization was impelled by the mechanization of civil society: by 1930 the supply of horses suitable for military purposes had eroded far below the wartime needs of even a small army.

The crucial problem involved not the implementation of change but the details of that change. Even the army's old guard rejected the firepower/attrition model of 1916/17. But what doctrines and weapons should inform its successor? A familiar judgment is that the combined-arms legacy of 1918 was submerged by a postwar parochialism, a network of branch and regimental loyalties generating "fighting one's corner" at the expense of a common intellectual matrix. But historically, even during World War I, the British army had eschewed principles for intangibles and favored generalizations over specifics. Empiricism and adaptability; a capacity for responding to new ideas and new inventions without forcing them onto Procrustean beds; theory only a step removed from the particular - these were the real "British ways in warfare."[18]

This approach was complicated in the 1930s by the dilemma of responding simultaneously to an increasingly threatening international environment, an electorate strongly committed to avoiding any repetition of 1914-1918, and an empire whose

policing and control had, as discussed, little direct relevance to the requirements of operations based on the internal-combustion engine. The real problem, however, was that the continuity and coherence of thought that had integrated the army into an entity was being eroded by mutually contradictory choices and mutually exclusive alternatives. The result by 1939 was a general-purpose force able to do nothing especially well. It had two kinds of tanks: an underpowered, under gunned infantry-support model and a family of light and medium tanks which were spectacularly mechanically unreliable and vulnerable to anything much more formidable than a can opener. Its standard for combined-arms mechanized operations was so low that as late as 1941 front-line humor observed that the only way two regiments could be sure of cooperating was if their commanders had slept with each other's wives. The army was almost swamped by a head over heels mobilization, initiated only in March 1939, which produced two dozen rifle-and –bayonet divisions that would not have been much out of place on July 1, 1916.[19]

To sum up, Great Britain prepared for future war with a mind-set that in World War I had arguably structured the steepest learning curve among the major combatants. That development had taken place with and depended on symmetry and gridlock. Neither was replicated in future conflict. The line between flexibility and amateurism, simple "muddling through" is a fine one. Britain's processing of 1914-1918 meant that it would muddle through 1939-1945.

The Outsiders: Italy and Japan

Japan and Italy offer codas to the application of the experience of the Great War to future-war planning. Italy's experience is best epitomized by war correspondent Ernie Pyle's (1900-1945) statement that Italy reminded him of a dog hit by a car because it tried to bite the tires. Benito Mussolini's (1883-1945) Fascist state understood the Great War's moral and material legacies better than is generally realized. During the interwar years, Fascist ideology and Fascist administration effectively engaged and mobilized the Italian people. The Italian navy successfully developed into a state of the art force optimized for the Mediterranean. The air force stood in Europe's front ranks technologically into the 1930s. The army moved, admittedly by default, in the direction of maneuver-based combined arms operations. None of this proved sustainable. Even before the Ethiopian war, Italy's material and technological resources were strained to the point where neither weapons nor electronics could be kept up to date. Doctrine lagged accordingly. Italy entered World War II in 1940 with a military establishment far enough behind the times that its repeated, often spectacular failures eroded the Fascist system's legitimacy. Uniquely among World War II's major combatants, Italy's people hated their government more than they feared their enemies. Fascist Italy's fate was that of a short-money player in a table-stakes poker game: early elimination.[20]

Among the powers, even including the USSR, Japan was the most accepting of aggrandizement by direct force. Its problem was the dissonance between means and ends. Japan was unable to match its significant potential opponents, Russia, China, and the US, in any context of mass. Whether in the immediate post-war climate of budgetary retrenchment or the significant absolute and proportional increase in military expenditures in the later 1930s, Japan's economy was unable to come near supporting full-spectrum technological modernization. The gap was bridged spiritually, through the modernization of Bushido, the traditional way of the Japanese warrior extended to an entire society enjoined to fulfill duty to the nation and the emperor without regard for cost. Bushido was incorporated into doctrine at all levels: speed, shock, and surprise would outweigh numbers and fire-power. Bushido found expression in weapons design: aircraft optimized for range and maneuverability at the expense of survivability; light machine guns with bayonet attachments; a torpedo whose range and power were unprecedented and never matched.

Japanese spirit power was, however, unable to overcome Chinese mass. The Pacific campaigns of 1943-1945 demonstrated that American ability to kill outmatched Japanese willingness to die. World War I indicated that modern war was a close synergy of the physical and the moral. Japan's World War II is a case study of this axiom.[21]

The Student: The USA

A strong case can be made that the legacy of the Great War was most successfully processed by its last participant. The United States processed the war's probable future effects in a theoretical context so extreme it invites characterization as a vacuum. In practical, or even theoretical, policy terms, it was unclear what exactly America's armed forces were supposed to do, where, when, and to whom. Neither army nor navy had a clear and present mission reflecting a clear and present danger. After a highly abstract competition with the Royal Navy, common sense and the Washington Naval Treaty turned the US Navy towards the Pacific where Japan was the perceived enemy. Strategy was fundamentally offensive, projecting a steady advance westward

towards a climactic decisive battle followed by a blockade of Japan's home islands. Ships were designed for Pacific operations, emphasizing range, habitability, and survivability. Unrestricted submarine operations were central to planning, a significant acceptance of total war in a maritime context. For all that, the Japanese threat did not become real in policy until 1940 and, in the public consciousness, not until Pearl Harbor. It did, however, provide an institutional focus that carried the Navy through the war's first six months and eventually across the Pacific almost as planned.[22]

The army's post-war state was rather worse. Its post-Civil War constabulary mission had long since disappeared. America's minuscule empire generated neither small wars nor internal security problems. Nothing with wings could reach the US with a meaningful payload. Mexico and Canada posed no threats worth considering. Turn-of-the-century fears of great-power invasion had been alleviated by the military fiasco at Gallipoli and the logistical problems of transporting the American Expeditionary Force (AEF) to France.

Military modernization meant accepting the large-scale projection of high-tech military power outside not merely the continental US, but the Western Hemisphere. This concept was strategically meaningless and politically impossible. The practical result was a skeletonized army scattered at random across the US with obsolete equipment or none at all, unable even to perform unit training on any scale. Yet, from that unpromising matrix the army produced a pool of commanders and staff officers not merely competent but high-average and able to organize, train, and command a mass force of mobilized civilians in the global context of World War II.

The key vector here was a school system that emphasized focusing on, and learning from, the army's mistakes in World War I. In particular, the interwar generation of officers understood the synergy between stabilized operations and mobile warfare. Mobility was ultimately decisive - but modern war between industrialized nations inevitably tended towards stabilized fronts. Resolving that conundrum required combined arms, able to emphasize firepower in the operation's initial stages, mobility in the later ones. That in turn required careful, comprehensive planning and acceptance of the fact that there were no short cuts, no secret formulas.[23]

These operational principles were applied to national mobilization that arguably incorporated more of the Great War's lessons than its military counterpart. In 1924, the Army Industrial College (now the National War College) began training officers in war's production and procurement aspects. Officers and businessmen cooperated in developing a number of mobilization plans whose common feature was a war resources administration with broad powers to mobilize and direct the nation's assets. Though never implemented, these plans provided experience in cooperation, facilitated personal contacts, and eased the transition to World War II.

Not until 1942 did Franklin Roosevelt's (1882-1945) administration develop the regulatory and administrative measures that moved the economy onto a war footing. Even then slack remained in the system but it was slack the government increasingly understood as positive. In World War I the nation's war effort had been rigidly and comprehensively controlled from the top. The second time around, time and again private initiatives proved more productive than centralized fine-tuning. Secretary of War Henry Stimson (1867-1950) put it bluntly and accurately: waging war in a capitalist economy was impossible unless business made money.

Stimson's point might well be extended to say that waging war in a democracy is impossible without engaging its people. Again in sharp contrast to World War I, voluntarism played a major and enduring role in America's war effort, synergizing with executive authority to generate conscious, affirmative, enduring participation in a war fought across the globe that posed no significant direct risk to the US proper.[24] America's World War II experience demonstrated that to wage and emerge from modern war, a healthy country needs the synergy of an effective government and a strong citizenry. All the rest can be developed and implemented.

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Notes

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