

WWI: STRATEGIES & STRATEGISTS

Engineers of Victory: The Problem Solvers Who Turned the Tide in the Second World War

By Paul Kennedy

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In his new book, *Engineers of Victory*, Paul Kennedy has crafted a unique and lively history of the Second World War. His frequently incisive tale takes a different tack from the more traditional historical focus on the decisions of senior statesmen or military leaders. Instead of “Masters and Commanders,” the author narrows his scope to the often unknown middle-rank officers and government officials who resolved critical operational gaps with the key organizational or technological breakthroughs that made victory possible. In 1942, the sweeping strategic strokes laid down by President Franklin D. Roosevelt and Prime Minister Winston Churchill represented more aspiration than executable plans. While the ends were clear, the means were not immediately at hand, and numerous shortfalls in capability were not yet even evident. Over a span of just a few years, enormous technological advances and organizational solutions were tested, refined, and fielded. Without such ways and means, the strategy of the Grand Alliance was mere paper.

Long a student of grand strategy, Kennedy has held the Dilworth Professor of History at Yale for three decades. While well recognized for his broad strategic and historical work, including *The Rise and Fall of the Great Powers* and *The Rise and Fall of British Naval Mastery*, here the author confirms his ability to weave operational detail and the tools of war into a cohesive and reader-friendly assessment.

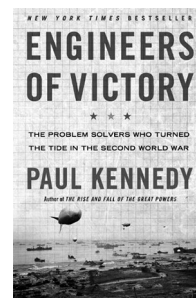
While acknowledging that no single variable can explain success, Kennedy’s underlying metanarrative is that wars are ultimately won by a superior organization imbued with a culture of innovation that actively encourages inquiry, experimentation, and interdisciplinary problem solving. Kennedy’s thesis is succinctly captured:

The most important variable of all, the creation of war-making systems that contained impressive feedback loops, flexibility, a capacity to learn from mistakes and a “culture of encouragement” that permitted the middlemen in this grinding conflict the freedom to experiment, to offer ideas and opinions and to cross traditional institutional boundaries.

This variable is the intangible factor of strategic or organizational culture that was ultimately needed to bring about the explicit and unconditional victory sought by the Allies. This was the “ghost in the machine” that brought down the Axis.

Kennedy’s masterfully told story is arrayed across five distinct operational challenges, and largely within the early 1943 to late 1944 time period.

The first case study involves the Battle of the Atlantic, which required relearning how to employ convoys to overcome the ruthless



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efficiency of Admiral Doenitz's U-boats. In 1942, the Allies had lost 6.3 million tons of shipping to U-boats, mainly off the coast of the United States. The introduction of convoy systems, intelligence, radar, capable escorts equipped with Sub-killing Hedgehogs, and determined commanders like Royal Navy Captain F. J. Walker won the one campaign that kept Winston Churchill awake at night.

Once forces and their material could cross the ocean, Allied forces needed to command the air. Here Kennedy excoriates strategic bombing advocates and the obstinate thinking that continued to commit large numbers of crews at risk for little gain until the Allies learned how to suppress German air defenses. Here the principal story is how Ronnie Harker, a British test pilot, proposed the merger of the powerful Rolls-Royce Merlin engine with the anemic American P-51 Mustang, producing a superb escort fighter.

The third case study addresses ground combat challenges, particularly the impact of German armored warfare. Kennedy naturally starts with the British battle against Rommel in North Africa, but he then reaches out to the Clash of Titans in the Eastern Front. "This struggle was unique in its grand combination of mechanized destructive power with Asiatic-horde-like warfare," Kennedy notes. "The existential struggle between Teutons and Slavs was now entwined with an increasingly complicated and ever-changing technological competition." The author details how a team of US engineers from Aberdeen critically assessed the numerous deficiencies of the initial models of the T-34, which helped the Russians modify their design and manufacturing.

The next competition required the Allies to learn how to project power from the sea. From the initial debacle of the Dieppe raid, Kennedy traces the steady learning curve from Operation Torch in North Africa to the subsequent evolutions in Sicily, Salerno, and Anzio. These demonstrated careful orchestration abetted by detailed planning. The culminating point for this organizational learning was D-Day, ably crafted by Admiral Bertram Ramsay, RN. In keeping with his focus on problem solvers, Kennedy lionizes Major General Percy Hobart for his numerous tank alterations, which the troops fondly called "Hobart's Funnies." He also notes the contribution made by the American Army Sergeant Curtis Culin, who fashioned the hedgerow-slicing Rhinoceros that allowed US armored units to avoid getting tied down in Normandy's bocage country.

In his final case history, the author shifts to the Pacific and the problem of defeating the "tyranny of distance" in that immense theater. Kennedy offers an extended discussion of the strategic options available to Allied planners but ultimately gets around to the key sub-components of waging war across such vast and contested distances: Andrew Higgins's flat-bottomed landing craft, the long-range B-29 Superfortress, and the unrestricted warfare conducted by US Navy submarines once the defective torpedoes were corrected. Disappointingly, in the latter case Kennedy chose not to include any discussion of how US submarine performance was enhanced by a feedback loop on best practices comprised of war patrol reports, endorsements up and down the chain of command, and the distribution of Submarine Bulletins. The extension of American fighting forces across the Pacific was abetted by a gigantic engineering organization, the Construction Battalions led by Admiral

Ben Moreel. His fighting “Sea Bees” built the bases, airfields, repair docks, and hospitals that were the essential infrastructure for Nimitz’s and MacArthur’s inexorable thrust towards Japan. Kennedy describes Moreel as “one of those neglected middlemen who made Allied grand strategy work.”

In each chapter, Kennedy’s demonstrated mastery of the historical record is matched by maps of extraordinary quality.

Engineers of Victory is a brilliant synthesis of these discrete developments, weaved into a coherent story that defines the real foundation of the grand alliance and its success. The key message is that it is not enough for policymakers to define great aspirations. While seldom a subject of serious inquiry, strategy has to be actionable and the ways and means harnessed to its ends must be practical. Success is gained only in the face of contingency and thinking opponents. The dynamics of strategic success must often be engineered by practical men and women who overcome the seemingly insurmountable.

Kennedy joins a growing field in military innovation studies. While there are books that address innovation before wars, particularly *Military Innovation in the Interwar Period* (Oxford University Press 1998) edited by the American duo of Williamson Murray and Allan Millet, until recently few historians have explored the process of innovation and adaptation that must occur *during* war. Murray’s later *Military Adaptation in War: With Fear of Change* (Cambridge University Press 2011) is devoted to some of the same cases but extends the historical range to the 1973 war between Israel and its Arab neighbors. Most recently, our understanding of adaptation in contemporary conflict was measurably improved by insights about lessons generated from the bottom up at the tactical level by Dr. James Russell of the Naval Post Graduate School in *Innovation, Transformation, and War: Counterinsurgency Operations in Anbar and Ninewa Provinces, Iraq, 2005-2007* (Stanford University Press 2010).

Kennedy’s assessment adds to these studies by showing that in more traditional forms of conflict, where materiel and technological capacity matter more, we should “mind the middle” to find the neglected realm of oft-forgotten individuals who provide the means of victory. The lesson for policymakers and strategists is that victory is not always found at the policy summit or even in the trenches or the cockpit. Sometimes it emanates from battle captains or “lab rats” in between with a keen appreciation for getting things done. Such mid-level genius does not spontaneously or routinely occur, however, and Kennedy might have buttressed his theme with the recognition that senior leaders must nurture and sustain the culture that allowed the “engineers” to have their ideas aired and tested. Both Roosevelt and Churchill were avid collectors of eclectic ideas and organizational mavericks.

Overall, Kennedy has succeeded in providing a riveting overview of the main competitions of the war as well as his “analysis of how grand strategy is achieved in practice, with the explicit claim that victories cannot be understood without a recognition of how those successes were engineered, and by whom.” Because of Kennedy’s superb narrative and research, this book will appeal to and is recommended to a wide range of readership, from civilians interested in history to senior defense leaders