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RAEDER VERSUS WEGENER

Conflict in German Naval Strategy

Commander Kenneth P. Hansen, Canadian Forces Maritime Command

Two of the most historically significant German naval officers of the interwar period began their careers together. Erich Raeder and Wolfgang Wegener both joined the navy in 1894, and both eventually attained flag rank. Their careers followed remarkably similar paths as they advanced up the ladder of naval power.¹ Serving together in East Asia as ensigns aboard the cruiser *Deutschland*, they formed a friendship that surpassed mere professional acquaintance—Raeder would be the godfather of one of Wegener’s children.² In his memoirs, Raeder would describe Wegener and two other officers training with him as “my intimate friends.”³ By the end of their naval careers, however, the two admirals

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were to become inveterate enemies. So great would be their enmity that upon Admiral Wegener’s death in 1956, Raeder, who was the senior surviving member of their enlistment “crew,” refused to deliver his eulogy, as was the normal tradition of their service.⁴

It has been suggested that Raeder’s resentment of Wegener was due to personal jealousy and the obstruction that Wegener’s theories represented to Raeder’s plans for recreating between the wars a German world-power fleet (*Weltmachtflotte*). A number of naval historians have been critical of Raeder’s leadership, supporting the general view that the German naval leadership was striving to recreate a “Tirpitzian” battle fleet.⁵ Specifically, many prominent German historians have also criticized Raeder’s leadership.

Their collective assessment implies that interwar German naval leaders learned nothing from the experiences of the First World War and that they directed all of their energy toward preparing for another major fleet engagement against the Royal Navy. Raeder has been accused of attempting “to formulate strategy . . . like his predecessor Tirpitz, . . . without weighing national goals, interests, threats, or strategies, seeing the fleet largely as an isolated entity, detached from grand strategic planning.”⁶ An American historian writing in 1940 felt that Raeder and his subordinates suffered from “an atrophy of strategic thought.”⁷

Severe criticism has also extended to the capital acquisition plans and operational concepts employed by the Kriegsmarine during the Second World War. One of the most damaging such attacks accuses the Germans of having no coherent concept of operations: “The important decisions on warship construction were changed several times and were not based on a detailed, structurally well-thought-out plan.”⁸ In this view, the German admiralty had not “even a modicum of strategic sense in the handling of capital ships”; for instance, *Bismarck* should have been held in reserve until *Tirpitz* was operational, at which point these two battleships should have been used together with the battle cruisers *Scharnhorst* and *Gneisenau* and an aircraft carrier. This “might have put an incalculable strain on British resources” and encouraged the Italian navy to more aggressive action. On this view, the Germans resigned themselves to their status as an inferior naval power and as a consequence “wasted their great ships singly as mere commerce raiders.”⁹

Notwithstanding such strenuous, authoritative condemnation, the case is not closed; another interpretation is possible. These critical scholarly assessments are significantly out of step with the opinions of the senior members of the German naval staff of the time, whose postwar writings have been largely ignored. Their collective assessment was that German strategy and operations were consistent with the tasks of the navy and its resources. They refute repeatedly the notion that the German navy was designed or organized for a classic Mahanian naval confrontation with the Royal Navy.

Indeed, only a few postwar scholars have entered the debate with an alternative view to the standard *Weltmachtflotte* argument, arguing that Admiral Raeder was correct to advocate a balanced fleet and not to concentrate solely on U-boats, as Admiral Dönitz wished, or on a fleet optimized for cruiser warfare.¹⁰ They suggest that the naval treaties of the interwar period had a profound influence on German naval strategy, force structure, and operational planning. Further, they point out that contemporary British intelligence assessments of German operating concepts ascribed to them an originality and potential lethality that caused great concern inside the Royal Navy.¹¹ That consternation is in itself an indication that the German naval planners had produced something

more imaginative and innovative than a conventional fleet structure for a hopeless force-on-force engagement.

The British concern over German naval combat potential is even more noteworthy in view of the broad range of naval tasks that the Kriegsmarine had to accomplish. The German navy of the 1930s was confronted by what has been described as a classic “medium-power naval dilemma.” The Kriegsmarine was caught perilously between its own limited capabilities, national maritime tasks, and a limited budget.¹² General Admiral Otto Schniewind, Commander in Chief Fleet, 1941–44, and Admiral Karlgeorg Schuster, Commander in Chief South Group, 1942–43, enumerated the three tasks of the German navy at the outbreak of the Second World War: first, to defend the German coast and coastal waters from enemy naval activity; second, to protect German shipping in territorial waters and prevent the interruption of seaborne trade with neighboring states; and third, “to attack with all forces at their disposal the enemy shipping and lines of communication of the Western Allies, to damage them and if possible to paralyze them.”¹³

These were fundamentally dissimilar and seemingly incompatible missions. Admirals Schniewind and Schuster categorized the third task as “the biggest and most difficult” but clearly gave it the lowest place in their hierarchy. The first and third tasks amounted to different aspects of sea denial; a force optimized for a long-term anti-mercantile campaign would be inadequate for homeland defense.¹⁴ The second task called for the exercise of sea control. Moreover, the “reach” implied by the first and second tasks was substantially different from that required by the third. Satisfying such diverse tasks and reconciling the radically different capabilities they respectively mandated would indeed be a tall order. Admiral Raeder, when he became the navy service chief, would be compelled to adopt a flexible approach to the development and employment of naval power.

Such considerations, alongside examination of the theoretical bases of each admiral’s position and comparison to the writings of the American admiral Alfred Thayer Mahan and the French admiral Raoul Castex, begin to make sense of the great dispute between the two former friends. More importantly, such a process sheds new light on German naval policy and force developments before the Second World War. The strategic requirements of Germany in a global war in conjunction with resource constraints, it will be seen, compelled the naval leadership to be innovative, flexible, and pragmatic.

“MEN OF PRINCIPLES”

Erich Raeder, who was to be head of the German navy for an extraordinary fourteen years and four months, would later be described by Vice Admiral Helmuth

Heye (who, as a commander in 1938, served as First Operations Officer on the German naval staff and during 1943–44 would be chief of staff for Naval Command North) as a leader who set an example that his staff officers found both admirable and practical. Heye found Raeder impartial, apolitical, and task oriented: “His leadership of the navy was very centralized and unified. . . . He attempted to keep the navy clear of all internal political difficulties.”¹⁵ One historian describes Raeder as “a man of principles[,] . . . [one who] rarely inspired enthusiasm but instilled solid respect in those who served under him, . . . a schoolmaster.”¹⁶



Grand Admiral Erich Raeder

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Another goes farther, asserting that Raeder was strongly in favor of intellectual development and wanted “to ensure that the naval officer corps drew upon the best and brightest youth that Germany had to offer.”¹⁷ On this view, Raeder genuinely regarded the entire German navy as one “naval family,” a sense that he expended considerable personal effort to nurture. However, there were limits to the grandfatherly schoolmaster’s familial inclusiveness and intellectual latitude. It has been claimed that because of Raeder’s philosophy of strict professional excellence (*Ressortdenke*), “intellectual challenges [were] . . . carefully omitted from the Naval Academy’s (*Marineschule*) curriculum and [from] later training.”¹⁸ It has even been argued that all German naval training encouraged mental and behavioral conformity, presumably with the views and conduct of the service chief, who “supported the [Nazi] re-

gime unflinchingly and proved merciless against malingerers, deserters, and those who questioned the authority of the Führer.” If that is true, Raeder’s strictness and intolerance of independent thought might have been strong enough to break the bonds of early friendship with Wegener and their common “crew” membership. However, that Raeder was a “man of principles” makes jealousy unlikely as the main motivation behind the feud.

The falling-out between Grand Admiral Raeder and Vice Admiral Wegener appears instead to have been ideologically based and directly related to Wegener’s professional writing. As Raeder began to exceed Wegener in rank, he would use his position and influence openly to suppress the strategic theories of his classmate and to isolate his former friend. Wegener was promoted to rear admiral on 1 March 1923, serving as inspector of naval artillery. With only four vice admirals’ positions, the competition for advancement was stiff, and

Wegener was directed to retire in 1926 by Admiral Zenker, the naval chief. Raeder, eventually head of the German navy, would direct officers under his command to write articles discrediting Wegener's work. He would also endeavor, unsuccessfully, to stop the publication of Wegener's book *The Naval Strategy of the World War (Die Seestrategie des Weltkrieges)*.¹⁹ The importance of the point is not merely biographical; the differences between the two admirals' philosophies were emblematic of a fundamental divergence at the highest levels of German naval strategy development during the interwar era.

THE WEGENERIAN TREATISE

Wegener's book, which was published in 1929 and reissued in a second edition in 1941, was actually a compilation of three staff papers that he had written during 1915, while serving as a fleet staff officer in the rank of lieutenant commander. Indeed, since his earliest days in the navy, Wegener had demonstrated considerable literary and intellectual ability. Between 1902 and 1907, he wrote no less than seven noteworthy papers, most of which while on the staffs of the Naval Education Department and the Naval Academy. After three years of sea duty between 1908 and 1911, during which he served as a gunnery officer in the battleships *Preussen* and *Kaiser Barbarossa* and finally in the heavy cruiser *Blücher*, Wegener's evident staff skills resulted in his promotion and posting as a fleet staff officer. His first assignment in this capacity was under Rear Admiral Gustav Bachmann as his Second Staff Officer, but his billet was quickly changed in 1912 to the First Staff Officer of the First Battle Squadron, commanded by Vice Admiral Wilhelm von Lans. The significance of this assignment should not be missed—the First Battle Squadron was one of the premier formations in the fleet, composed of eight powerful battleships of the *Nassau* and *Helgoland* classes. Wegener's abilities had landed him a high-visibility operational post under the direct supervision of a very senior flag officer.

By February 1915, when the first of Wegener's controversial papers was issued under the signature of Admiral Lans, the reality of the German naval situation was becoming apparent to most observers. The enormous cost of building, supplying, and crewing the fleet had been borne only grudgingly by both the German army and the public.²⁰ After the loss of *Blücher* at the Battle of the Dogger Bank (see map 1), Admiral Tirpitz and his Risk Theory (*Risikogedanke*) became the object of increasing criticism from many quarters.²¹ The inactivity of the High Seas Fleet and the mounting effect of the British "hunger blockade" were having disquieting effects. Wegener's questions about the navy's employment came at a time when the German army was increasingly resentful that the navy had suffered relatively little when its own casualties were heavy; the German public, for its part, was generally skeptical about the navy's performance;

MAP 1



and the service itself was suffering a crisis of confidence. When the first of Wegener's papers was circulated, Admiral Tirpitz became enraged. That it was possible for Wegener to write two further papers and release them under his own signature is truly remarkable, with regard not only to his junior position and Tirpitz's ire but to the obvious fracture it represented in the strategic thinking of the German naval officer corps.²²

"A Dead Angle in a Dead Sea"

Collectively, Wegener's three papers argued that the strategic-defensive orientation of the Risk Theory was invalid, in that it did not threaten the principal British vulnerability, maritime trade.

The complete dependence of British industry upon imported resources and the inability of agriculture to feed the nation had been well known long before the First World War. The obvious way to bring the imperial giant to its knees was to sever the maritime jugular: "In quintessentially Mahanian terms, the [Wegenerian] treatise stated that sea power consisted of control of maritime communications, particularly the protection of vital sea lanes." Writing in an abrupt and forceful style, highlighting conclusions in terse, one-sentence paragraphs, Wegener charged the wartime leadership with misunderstanding the fundamental uses of the sea. Moreover, he accused it of committing the fleet to battle in pursuit of tactical victories that, having no strategic consequence, were purposeless. Wegener combined classically Clausewitzian logic, which dictated that battle must be accepted only in support of a political aim, with an astute assessment of the German military situation and a clear appreciation of European geography. From all this he concluded, "Our defensive operations plan lacked an object of defense. Therefore, there was no battle for command of the sea in the North Sea. The Helgoland Bight was, is, and remains a dead angle in a dead sea." Wegener asserted that geographic position was just as vital as the possession of a fleet of ships and that such position should relate directly to the willingness of one's forces to engage the enemy: "The tactical will to battle is a correlate of geography."²³

Having argued that the current strategy was ineffective, Wegener set out his own vision of how the British could be attacked effectively: "Naval strategy is the science of geographic position . . . with regard to trade routes." He declared that the only British traffic vulnerable to German interference was the Norway–Shetland Islands–Scotland route through the North Sea. In order to attain a

geographic position of strategic relevance with respect to British mercantile shipping, he argued, it was necessary to mount a “northward strategic-offensive operation” that would change the geographic setting. He proposed expansion through Denmark and southwestern Norway and then over to the Shetland Islands, “the Gate to the Atlantic.” Wegener insisted that by positioning itself to threaten a trade route the German fleet could overcome the British disinclination to tactical engagement in favor of distant blockade. The British would then be obliged to commit to battle, during which “the compulsion that we would have exerted would have increased with our every success.”

Wegener felt, writing soon after the First World War, that had the German navy been in a position to threaten a trade route, “every battle, every skirmish would have contributed towards a decision. Only battles with the greatest possible strategic exploitation would have existed—no battle ‘in itself,’ whose effect would have paled without any resulting strategic exploitation.” In addition, Wegener envisioned for a future war another, larger operation, taking the strategic offensive to seize French ports on the English Channel and on the Atlantic so that an even greater campaign against British trade routes could be conducted.²⁴ Possession of such ports would impel both sides toward a final and decisive naval confrontation. Ultimately, German ability to control lines of communication would arise not from operations designed to exert such control, however, but as a natural consequence of that conclusive battle. Wegener’s logic, then, was pure Mahan—he sought to imperil British trade as a means of forcing the Royal Navy into a fight to the death.

The influence of Rear Admiral Alfred Thayer Mahan’s writing upon Kaiser Wilhelm II and the entire German navy has been extensively documented. It is claimed that there was in that service an “almost slavish devotion” to the Mahanian doctrine, to which Admiral Raeder did not need to refer, as it had been accepted “as an article of faith” by the German naval officer corps;²⁵ “Mahan was the Bible for the German Navy.”²⁶ The copious marginal notes in Wegener’s copy of Mahan’s *The Influence of Sea Power upon History* show how marked was the similarity between the Wegenerian and Mahanian philosophies. Wegener tried to orchestrate a geographic setting for “strategic exploitation,” a major, decisive battle that would take place in circumstances favorable to Germany; “A strategic offensive would have altered the course of the war” just ended.²⁷ Tirpitz, instead, had expected the historically aggressive British to bring the battle to him somewhere in the southern or central North Sea.²⁸

Wegener’s interest in securing bases with better access to the North Sea, particularly those with good deep-water access (which would be less vulnerable to mining) had very strong Mahanian overtones.²⁹ Wegener came logically to the same sort of conclusion that Mahan would have advocated—that a decisive

conflict could be achieved under circumstances that implicated the security of British merchant shipping.

The Strategic Debate

Wegener's staff papers, when they originally appeared, were bound to attract attention that had both positive and negative consequences. The upper echelons of the German naval staff gave them a mixed reception. Some flag officers, such as Admiral Hugo von Pohl, Commander in Chief Fleet, were very positive about his work, while others, such as Captain Adolf von Trotha, who would become head of the service during 1919–20, thought that "it lacked aggressive spirit."³⁰ Before 1914 such professional critiques of naval strategy could have been construed as constructive or academic, but in the midst of war against Britain, overt and strident criticism by a middle-ranking staff officer was risky, to say the least. While Wegener enjoyed a certain amount of protection through a distant relationship to Fleet Admiral Henning von Holtzendorff, chief of the Admiralty Staff after September 1915 and a man he referred to as his "uncle," he could not have counted on it forever. In 1916, Fleet Admiral Reinhard Scheer (the new commander of the First Battle Squadron), Vice Admiral Eberhard Schmidt, and Captain Magnus von Levetzow (the Deputy Chief of the Operations Division) paid a personal visit to Wegener and ordered him to cease writing for the remainder of the war.³¹ He complied; promotion and command of the light cruiser *Regensburg* followed soon afterward, in 1917. The return to sea duty helped to still Wegener's pen, although informally he remained very outspoken throughout the war.

After the war, Wegener reentered the strategic debate with his characteristic vigor. In 1926, he submitted a staff memorandum that reprised his earlier writing. The thrust of Wegener's work remained that Germany must formulate a mature concept of seapower if it aspired to improve its national status; further, Britain was Germany's "natural enemy," the British fleet a deadly obstacle that could not be overcome without a fundamental restructuring of the geographic realities of the German situation. That restructuring, attained by fleet engagement, would further German "world-political strategic aims." By the time his book appeared in 1929 the stridency of Wegener's anti-English tone had moderated, but the essentials were the same.³²

Reviews of the book outside Germany, when it appeared, were as mixed as they had been of the original papers. It was translated into Russian and republished in the Soviet Union in 1941. There Wegener was viewed as the leader of a "new German school" that had realized the geographic importance of Scandinavia to Germany—a factor the Russians felt had been missed during the First World War. Wegener's theories were even taken by Russian specialists as the

“official” view of contemporary German naval strategy.³³ The Soviet historian V. A. Belli, writing in the July 1940 issue of *Morskoi sbornik* (the preeminent Soviet naval journal), declared that “the struggle for Scandinavia [was] above all [a German campaign] to gain a favorable strategic position,” concluding with the observation that “a favorable strategic position [was an essential] element of command of the sea.”³⁴ The similarities to Wegener are unmistakable.

As for the Royal Navy, a 1929 article in *The Naval Review* by Alfred Dewar took a far less favorable view of the importance of geographic position to naval strategy. Dewar felt that the crux of naval flexibility had been best summed up by Admiral John Fisher in 1910: “To be free to go anywhere with every d—d thing the Navy possesses.” The British reviewer opined: “Wegener drives geography too hard.”³⁵ Similarly, an American analyst thought Wegener’s theories were both dangerous and misleading:

The result [of his study] was a courageous attempt to lead the German Navy out of the maze in which Tirpitz had left it, was in the end, merely to plunge it into another confusion, nearer to the truth, more subtle, and hence in a way more dangerous. By shift[ing] from the “command” to the struggle for it, and again from “command” over an opponent to “command” over a geographic area or trade route, Wegener was led to regard “command” as something that could be localized, and hence divided, until he finally arrived at that most dangerous and misleading identification of “command” with the “control of sea-communications.”³⁶

Reversals and Weaknesses

One of the German naval officers who could not support Wegener’s ideas was his crewmate Erich Raeder. When Wegener was First Staff Officer in the First Battle Squadron, Raeder was serving in the same capacity under Vice Admiral Franz von Hipper, Commander of the Scouting Forces. Raeder’s potential too had evidently been recognized, and it had been rewarded with an equally prominent posting under one of the brightest and, after the Battle of Jutland, most famous of all German admirals. But if Wegener’s and Raeder’s career paths were so far parallel, their professional outlooks were diverging. Hipper “[was] highly impressed with the Wegener trilogy and sought to submit it to Admiral Bachmann of the Admiralty Staff for evaluation—until his First Admiralty Staff Officer, . . . Erich Raeder persuaded him otherwise.”³⁷ Plainly, Raeder had found something in the work to which he objected strongly. What was it? To understand, let us return to Wegener’s thesis.

When Wegener’s wartime papers first appeared, Tirpitz had assigned two senior captains to draft counterposition papers; these replies attacked the details of Wegener’s work but did not “come to grips with its strategic insights.”³⁸ Actually, Wegener’s thesis had enough inconsistencies of detail and

contradictions in terms to be vulnerable on the level of technicalities alone. Despite the accuracy of the basic geostrategic assessment and the remarkable clarity of Wegener's style, many reversals of position are apparent both within and between the three papers. Ever meticulous, Raeder would certainly have latched onto these glaring weaknesses and on that basis questioned the entire work.



Admiral Wolfgang Wegener

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As an example, immediately after his statement (which became famous) belittling the Helgoland Bight battle as a fight for “a dead angle,” Wegener declares, “And yet, we once did exercise command of the sea from the Helgoland Bight—namely, with the U-boats, which even at great distances from their base have the ability to exert lasting pressure upon enemy trade routes.”³⁹ In this short sentence Wegener betrayed a misunderstanding of the term “command of the sea” and so undercut his thesis that fleets require favorable geographic position to effect such command. U-boats were in fact instruments of sea denial and trade interdiction, not sea control. The distant blockade of German ports by the Royal Navy was never broken by the German submarine offensive; British command of the sea, though challenged, remained intact. In another place, Wegener effectively countered his own “Gate to the Atlantic” thesis by openly doubting that the British would really contest a challenge in the Shetland Islands and suggesting they would likely relocate the trade route.⁴⁰

Further, Wegener, having clearly identified the importance of British maritime commerce, failed to recognize that the converse was also true. That is, the Baltic was vital to the Germans during the First World War for the shipment of strategic materials and commercial goods. Again, Wegener in one place complains bitterly, “Our defensive operations plan lacked an objective of defense” and that “the position of the Helgoland Bight commanded nothing.” Very soon afterward he contradicts himself: “Imagine that our fleet had been totally defeated [there]; what consequences this would soon have entailed for our economic and military situation. We could not have maintained our east and west front with an indented or even strongly threatened northern front.”⁴¹ In such passages his appreciation of the German position seems as weak as his assessment of Britain's position is accurate.

The greatest weakness in Wegener's proposal for an offensive campaign in the North Sea is his complete failure to suggest how it could be accomplished.

Knowing full well the *Risikogedanke* assumption that an attacking force needed a one-third superiority, he does not even hint how an inferior German force could seize the Shetland Islands.⁴² Helmuth Heye, at the time a Plans Division staff officer, was later to write that the Washington Conference tended to keep small fleets inferior despite technological innovation; accordingly, Heye felt, qualitative differences could never make up for inferiority in numbers.⁴³

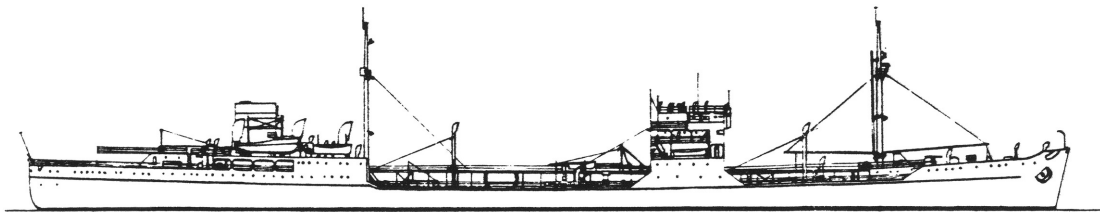
Wegener's writing never addressed this major issue. His theoretical foundation made set-piece battle the object of his proposal for aggressive action, although as a gunnery officer of considerable experience he should have been well aware of the overwhelming disadvantage under which his own inferior fleet would labor;⁴⁴ Wegener himself complained bitterly of the attitude of inferiority that their smaller ships and guns inculcated among German crews.⁴⁵ Once again, Mahan's "big-ship mentality" and emphasis on concentration of force for decisive engagements is clearly evident in his thesis.⁴⁶ Wegener, like Mahan (and despite his geopolitical orientation), ignored the economic realities of his theories.⁴⁷ German naval force structure was dictated by systemic factors; Germany simply did not possess the resources necessary to produce the naval capability Wegener's vision seemed to require.

RAEDER AND THE REALITIES

The limitations of German naval capability were set by national defense policy, which was focused on priorities dictated by the military situation on land. The naval policy that resulted reflected the pragmatic convictions of Erich Raeder. Decades later, General Admiral Herman Boehm, who was to be Commander in Chief Norway in 1943, outlined post-First World War German naval policy prior to the rise to power of Adolf Hitler. In those years it was strictly limited to the prospect of a war with Poland, which would likely draw in France against Germany. According to Boehm, the German navy was tasked with the protection of East Prussia against French naval intervention: "At that time the basic idea of the Naval High Command was to prepare for a short counteraction against any Polish aggression and, by securing of supplies from overseas, also against France."⁴⁸ The threat to East Prussia in the event of French naval intervention was clear; as Rahn has observed, "without naval protection, Poland could cut the sea route across the Baltic, the only reliable line of supply for East Prussia."⁴⁹ Raeder, as service chief, well understood the German navy's vital defensive role, and early ship designs in his tenure were defensive, not offensive, in nature. Contrary to popular opinion, for instance, the armored ships (*panzerschiffe*) of the *Deutschland* class were designed specifically for this two-front French-Polish scenario.

It is the high endurance and relatively heavy armament of the *Deutschland*-class that has erroneously attracted attention to the German *panzerschiffe* as commerce raiders, designed from the outset for “both large-area warfare in the North Sea and offensive operations in the Atlantic.”⁵⁰ Instead, their extended cruising range was meant to facilitate “tip-and-run tactics” in the North Sea against an opponent who was superior but not overwhelming. (The diesel engines that gave them such endurance had “teething problems” that brought strong criticism at the time.)⁵¹ Their “long legs” were valuable because they permitted the sustained use of speed for tactical advantage. The potential French naval threat was a blockade of German ports by a cruiser squadron, reinforced by a modernized but old battleship: the *Deutschland*-class ships were intended to break it. Optimized for North Sea operations, they proved “wet” ships when later committed to trade warfare on the open ocean, and the poor performance of their diesel engines became a major limitation; altogether, they were far less imposing ships than has been portrayed.⁵²

ERMLAND (1940), FRANKEN, UCKERMARK, HAVELLAND



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Another point of divergence between Raeder and Wegener was the relationship of Scandinavia to German naval aims. If for Wegener it bounded on the east the “Gate to the Atlantic,” for Raeder as a fleet staff officer it related primarily to the absolute necessity to the German war effort of Swedish iron ore, shipments that could be denied by an enemy in Norway. Germany’s self-sufficiency in iron ore was significantly less in 1939 than in 1914.⁵³ One result in the Second World War was to be a division of effort between the interdiction of Allied shipping on the open ocean and the protection of German shipping. A second would be Raeder’s recommendation to invade Norway, although he believed doing so “violated a fundamental rule of war by operating at a considerable distance from its home bases and across waters at that time more or less dominated by the enemy,” and heavy losses were probable.⁵⁴ Both Admirals Wegener, in his earlier writings, and Raeder concluded that moving into Norway was essential; Raeder, however, in 1940 would actually seek permission to do so only when convinced that Norwegian neutrality could not be relied upon to secure the iron ore supply—not in

order to provoke a decisive battle, from which, Wegener assumed, the critical commodities would flow as a consequence of victory.

The reputation of Raeder as a naval officer of Tirpitzian (and thus Mahanian) lineage persists, and the Norwegian campaign (along with the “Z” shipbuilding plan, discussed below) is frequently offered in evidence. Raeder, however, had quite different theoretical foundations and upbringing. One of the earliest and most profound influences on Raeder was Admiral Franz von Hipper. As his First Staff Officer, Raeder would have been involved in Hipper’s remarkable plan to employ the entire German battle cruiser force in the North Atlantic. The aim was to draw away, by large-scale commerce raiding, British surface forces from the blockade of Germany.⁵⁵ Hipper was endeavoring to generate opportunities for portions of the German fleet to engage the Royal Navy on more favorable terms and, at the same time, to conduct a dynamic form of anticommerce warfare (*Kleinkrieg*) against the British sea lines of communication. In the end, Hipper’s plan was dismissed by the high command because it did not conform to the Tirpitzian strategy of decisive battle in the North Sea.

Hipper’s departure from Tirpitzian thinking was also evident in his advocacy of ships with increased weaponry, speed, and endurance. The armor-versus-speed argument went on endlessly in all naval headquarters; it is the notion of increased range that has particular significance here. Successive classes of German capital ships showed only negligible improvements in range;⁵⁶ the endurance of German battleships tended to be between four and five thousand nautical miles at an operational speed of approximately fourteen knots, as befitted Tirpitz’s vision of the theater of operations limited to the North Sea. Hipper’s theories on naval warfare were decidedly neither Tirpitzian nor Mahanian; Raeder, then, was exposed to innovative thinking in his early days as a fleet staff officer.

Soon after the Great War, Raeder was posted to the Naval Archives (*Marinearchiv*), where he wrote two of the three official volumes on German cruiser warfare. His work, which earned him an honorary doctorate from the University of Kiel, pointed to the lack of effort in this aspect of the war; in particular, it “criticized the High Seas Fleet Commander for not undertaking operations which would support the cruiser squadron under Count von Spee fighting its way home from the Far East.”⁵⁷ Raeder’s divergence from the Mahanian conception of naval warfare thus continued.

Raeder’s elevation in 1928 to Chief of the Admiralty, relieving Admiral Zenker, was a further indication that his ideological heritage was not Tirpitzian. The defense minister at the time was a retired lieutenant general, Wilhelm Groener. Groener, who had been in charge of logistic support to the army during the Great War, was not a fleet enthusiast. He considered that the imperial navy had been a luxury and an unnecessary drain on funds, one that the army could

not now afford.⁵⁸ Had Raeder espoused the Tirpitzian doctrine strongly, Groener would not have appointed him.

In the late 1920s the German navy was being publicly accused of having provoked, prolonged, and, eventually, lost the war. The naval officer corps itself was divided by a storm of controversy over Tirpitz's memoirs, which had been published in 1919, and over Wegener's writings, now in book form. Raeder responded by suppressing all critical publications—not out of envy over Wegener's growing reputation as a strategic thinker or to defend the image of Tirpitz but to reestablish the German navy as a unified, viable, and reliable arm of the government. In view of the ruthless interservice rivalry between the army and navy (and later the air force), Raeder felt it was essential that the navy preserve and enhance its professional standing if it was to have a practical naval role in foreign and domestic policy.

Elements of a New Naval Strategy

On what theoretical basis could such a role be based? The Tirpitzian dream of a *Weltmachtflotte* was now neither politically nor economically feasible, and a fleet based on cruisers and submarines and designed for *Kleinkrieg* had been prohibited by the Treaty of Versailles. Another approach to maritime strategy would be required. Raeder found it in the writings of a recognized and respected naval theorist, one who specialized in middle-power navies—Vice Admiral Raoul Castex of France.⁵⁹

Castex and the "Middle Ground." The theories of Castex, which were developed during the interwar period, were ideally suited to the German position as an inferior continental naval power. Castex, like Raeder, had "had to conceive a naval strategy by which a land power might deal with British naval superiority."⁶⁰ The key was to find a middle-ground strategy, between the fleet-action theory of Mahan and the Jeune École theory of Theophile Aube, which employed operational maneuver to create favorable tactical situations.⁶¹ Castex believed that it was not necessary to seek a Mahanian fleet action, rather that a limited tactical victory in a critical situation could "upset the balance" and win opportunities for maneuver. The benefits of winning even secondary objectives in secondary theaters "may exceed expectations and bring a success having major repercussions upon the principal theater, where all remains in doubt, even though the plan of maneuver has foreseen exactly the opposite."⁶² On this basis Raeder envisioned a useful role for the navy that the German government might be persuaded to accept. German defensive requirements for seapower had to be balanced against the undeniable need to go on the offensive against Great Britain. To resolve this seeming conundrum, as will be seen, Raeder would resort to an innovation not seen before in naval history.

Breadth and Scope. If Wegener focused almost exclusively on the North Sea, Raeder had an expansive view of naval warfare and the area over which it should be conducted. His conception of seapower was in fact global:

All naval theatres of war formed a homogenous whole and that consequently any operation must be viewed in its correlation with other sea areas. Accordingly, cruiser warfare overseas and operations by the battle fleet in home waters were integral components of a single naval strategy which, by exploiting the diversionary effect, sought to weaken the enemy's forces and to disrupt supplies.⁶³

That is, Raeder envisioned improving the odds locally through actions half the world away—an impressive grasp of the potential for the long reach of seapower. Raeder's frame of reference dwarfed Wegener's; this frame of reference underlay a chain of reasoning by which Raeder attempted to answer the fundamental question of how an inferior naval power could engage a superior opponent, something Wegener had not been able to do.

Range and Endurance. An active approach is necessary if maneuver opportunities are to be generated; the strategic-defensive of the Tirpitzian *Risikogedanke* could not produce them. Further, the geographical restrictions that Wegener perceived in the Great War and 1920s persisted in the 1930s; maneuver would require sea room and the endurance to exploit it. For Germany, then, endurance was a fundamentally limiting factor on the effectiveness of fleet forces. From the moment Raeder assumed command of the German navy, high endurance became a design goal for new Kriegsmarine warships.

During the interwar period, before underway refueling was perfected, the limiting factor of onboard fuel capacity caused naval influence to be regarded as regionally isolated, centered upon major bases with fuel bunkers: "While machine propulsion gave a new vigor and celerity to maneuver, the necessity of keeping the fleet supplied with fuel acted as a tether upon it."⁶⁴ It was accepted as a general principle that "a battle fleet lost efficiency in direct proportion to its distance from its base."⁶⁵ Moreover, for any nation considering cruiser warfare against Great Britain, the lack of a supporting network of bases was a crippling deficiency.⁶⁶ In the First World War, Germany's overseas possession had been insecure and could not be counted upon as naval bases. In response, the endurance of German warships was now substantially increased by the use of efficient diesel and high-pressure steam propulsion systems.

The Anglo-German Naval Treaty imposed Washington Treaty standards and excluded the innovative *Deutschland*-class *panzerschiffe*. Nonetheless, the exceptional endurance designed into that class was carried over into all subsequent warships, in part through large bunker capacity, an approach adopted from U.S. practice. Endurance would no longer dictate the functional roles that a

particular type of German warship could undertake. From destroyers to battleships, all warships would have the “legs” necessary to range widely and employ sustained high speed to tactical advantage.

German warship endurance during the early interwar period was double that of the First World War. Warships designed after 1938, when planning centered on action against Great Britain, had even greater endurance. The figures (detailed in table 1) point to an impressive and unmistakable increase in German naval capabilities. In part, they represent one of Raeder’s answers to Wegener’s “dead angle”—that is, to give warships the freedom to operate at high speed and still reach areas inaccessible to the old “short-legged” German navy. “With a fleet of this kind,” Heye was to agree, “we could indeed cause damage to the enemy,” even while defensive operations were limited to the Baltic Sea and coastal waters close to German-controlled territory.⁶⁷

**TABLE 1
GERMAN WARSHIP ENDURANCE**

Type	Pre-1938		Post-1938	
	Class	Endurance (nm)/ Speed (kts.)	Class	Endurance (nm)/ Speed (kts.)
Aircraft Carrier	<i>Graf Zeppelin</i>	8,000/19	—	—
Battleship	<i>Bismarck</i>	8,100/19	H	16,000/19
Battle Cruiser	<i>Scharnhorst</i>	10,000/17	O	14,000/19
Armored Ship	<i>Deutschland</i>	10,000/19	P	15,000/19
Heavy Cruiser	<i>Hipper</i>	6,800/19	—	—
Light Cruiser	<i>Leipzig</i>	5,700/19	Scout Cruiser	12,000/19
Destroyer	<i>Z-17</i>	4,800/19	<i>Z-52</i>	16,000/19
Torpedo Boat	1924	3,100/17	1939	5,000/19
Submarine	VIIA type	4,300/12*	IXA type	8,100/12**

* Increased to 6,500 nm in later versions of the class.

** Increased to 11,000 nm in later versions of the class.

Source: H. T. Lenton, *German Warships of the Second World War* (London: Macdonald and Jane’s, 1975).

ESCAPING THE “DEAD ANGLE”

German naval operations, then, were not to focus solely on either the offensive or defensive. Prewar British naval intelligence “credited German naval strategists with sufficient imagination to envisage an alternative to Tirpitz’s defunct programme of a symmetrical armaments competition.”⁶⁸ Royal Navy studies concluded that the greatest threat from the German surface fleet would be employment as single ships in a merchant-raider role to complement the efforts of the U-boats.⁶⁹ That no such concerted effort in fact developed early in the war was only because the resources of the Kriegsmarine were overburdened by that time.

The requirement for operational flexibility gave rise to what became known as the German “double-pole” strategy and also to the “Z Plan,” a shipbuilding program approved in the mid-1930s for the period 1939–48. The Z Plan

envisioned an eventual force of thirteen battleships and battle cruisers, four aircraft carriers, fifteen *panzerschiffe*, twenty-three cruisers, and twenty-two large destroyers.⁷⁰ Under the double-pole approach, single high-endurance warships would engage in distant operations against British commerce while two small but powerful battle groups, each formed around battleships plus a single aircraft carrier and screened by diesel-powered light cruisers and destroyers, maintained local sea control in the North and Norwegian seas.⁷¹ These proposed battle groups represented a major departure from conventional naval organization and operational concepts.

To address the material inferiority of the German fleet, Raeder drew upon the First World War initiatives of Hipper (in his battle-cruiser plan for the North Atlantic) and Admiral Reinhard Scheer to frame a modern, coordinated, functional organization. Scheer, who had commanded the High Seas Fleet at Jutland and died in 1928, had believed (as Castex was to observe) that naval operations should be “closely interrelated[,] . . . combined within a framework of coordinated operations” to heighten their chances of success.⁷² Specifically, Scheer’s attempts to coordinate mine, submarine, and zeppelin operations with surface fleet action now became the basis of Raeder’s approach. Raeder’s own analysis convinced him that along with coordination, the elements of speed and maneuver represented the future of naval warfare. However, he envisioned mixed task groups, not the single-type formations of the First World War, which he considered too inflexible to meet rapidly changing circumstances.⁷³ Germany began experimenting with small task forces of mixed ship types several years before the second war began.⁷⁴

These new mixed-type formations could fulfill several purposes. They could secure the local sea control needed to ensure the safe movement of Swedish iron ore through the Baltic and along the Norwegian coast. They could, by diversionary actions in the North Sea, facilitate movement of raiders in and out of German-controlled waters. In the same way, as dynamic “fleets-in-being,” they could divert Allied groups pursuing these raiders, or even make forays to hunt down the forces tracking German raiders. They might also find opportunities to attack convoys themselves. The Germans intended, through aggressive and wide-ranging operations against shipping, to force the British to implement a global scheme of convoys, in such numbers as to stretch Royal Navy escort and covering forces to the absolute maximum, creating exploitable opportunities for German surface forces.⁷⁵ Under such stress, Raeder predicted, not every convoy would be protected, and ocean convoy escorts would frequently be limited to single armed merchant cruisers that did little more than ensure navigational accuracy and send position reports—which proved to be the case.⁷⁶ Any such convoy encountered by a German mixed-type task force would be quickly destroyed.

MAP 2



The operational concept behind the Z Plan and double-pole strategy was not to seek set-piece engagements but to create secondary opportunities through maneuver that would help rebalance the odds of the primary naval conflict, being fought in the Atlantic. Until the impressive combat power they envisioned could be in service, the trap of the “dead angle” remained—that is, to engage the enemy in an area of strategic consequence, the Germans had to find a way to reach the Atlantic (see map 2). Mahan would have said that more bases were the solution. Wegener’s position that bases had to be secured by conquest was well known; he had advocated military expansion into Denmark and Norway.⁷⁷ Raeder set about trying to obtain the bases by diplomacy.

Forward Basing

Through the German naval attaché in Moscow, Raeder requested from the Soviet Foreign Minister Molotov, in return for technology to support its own ambitious fleet expansion plans, permission to establish a German naval base in the

Motovskiy Gulf, on the Barents Sea nearly adjacent to the Norwegian border. On 17 October 1939, the Soviets offered the use of Zapadnaya Bay, which empties into the Motovskiy Gulf: “In this bay, Germany may do whatever she wishes: she may carry out whatever projects she could consider necessary. Any type of vessel may be permitted to call there (heavy cruisers, submarines, supply ships).”⁷⁸ German ships could enter in any season and, as the bay was wholly surrounded by Soviet territory and closed to shipping, in complete secrecy. In this way Raeder devised a partial solution to the problem of geostrategic isolation that Wegener did not envision.

Understanding fully that the security of the leased Russian base, in a remote and undeveloped area, was tenuous at best, the Germans planned to sustain it by “afloat logistical support.” Several merchant ships were taken up from trade and made suitable for repair, supply, accommodation, and command support tasks. Ultimately, three vessels were modified and assigned to the new base, which was given the code name BASIS NORD.⁷⁹

Clearly, in this a Mahanian battle-fleet action was not the object of Kriegsmarine planning; something more sophisticated and deadly was being contemplated. The concept of afloat logistics support was exploited to provide a freedom of action on a scale unprecedented in German naval history. It soon produced a revolutionary design for a fleet support ship that was decades in advance of every other navy in the world.

Underway Replenishment

Trials with underway replenishment began in 1928 with the chartered tanker *Hansa* from Atlantik Tank Reederei, of which two members of the Board of Directors were former naval officers. In spring and fall of both 1934 and 1935, fleet exercises experimented with refueling techniques. The British “stirrup method” of astern refueling with fueling hoses suspended from a towing hawser was trialed; the Germans concluded that it was impractical. In fall 1935, experiments with alongside refueling while under way were conducted between tankers and torpedo boats as well as between cruisers and torpedo boats. The trials used a system of towing alongside, reminiscent of the American Dinger-Nimitz system developed during the First World War, passing fuel oil, diesel fuel, and water hoses with booms and cranes. Although it was a demanding seamanship evolution, with practice the Germans found they were able to begin pumping about twenty minutes after the ship wishing to refuel began its approach alongside. During the Spanish Civil War, German ships frequently replenished at sea from auxiliary support ships, achieving fuel transfer rates of 120 tons per hour under operational conditions.⁸⁰

Having mastered the techniques, the German navy turned its attention to the characteristics of its auxiliary tankers, applying lessons from the fleet exercises and the Spanish Civil War. After testing two vessels of an intermediate type, the Germans produced a mature fleet supply ship (*trossschiff*)—the six-ship *Dithmarschen*-class, launched between 1937 and 1940.⁸¹ Five were commissioned; two of them, *Altmark* (later renamed *Uckermark*) and *Westerwald* (later *Nordmark*), were operational at the start of the war.⁸² (The sixth unit, *Havelland*, was launched in 1940 but was never completed.) They were innovative and effective ships that would play a major part in the subsequent development of replenishment at sea.⁸³

The *Dithmarschens* could each carry nearly nine thousand tons of fuel oil and four hundred tons of lubricating oil, as well as ammunition, spare parts, provisions, and water. They were equipped with repair shops, hospital facilities, and large boats used to transfer stores. They were also quite well armed, with three 150 mm deck guns, two 37 mm and four 20 mm antiaircraft guns, plus eight machine guns. These extra features reduced the liquid cargo that could be carried but added significantly to the diversity of support that could be provided. Twin shafts produced a top speed of twenty-two knots, enabling the *trosschiffe* to accompany warships in high-speed transits or outrun small patrol craft.⁸⁴ These flexible and capable multicargo supply vessels brought an ability to exploit the sea through the local use of naval power substantially closer to realization. A comparison between contemporary American and British oilers, and German *trosschiffe* is given in table 2.

The *Dithmarschens* were the longest and fastest tankers then in service with any navy. This length was necessary to achieve high speed. A coincident benefit of their streamlined hull form was exceptional fuel economy; 12,500 miles at fifteen knots, without expending cargo fuel. All this was necessary to support long-range commerce raiding operations that, as was known from the outset, would be furtive, gauntlet-running enterprises.⁸⁵ Most importantly, the *Dithmarschens* were equipped with an ingenious system of light but durable buoyant rubber hoses that could either be floated aft to a receiving ship for

TABLE 2
CLASS DATA FOR AMERICAN CIMARRON-CLASS, BRITISH DALE-CLASS, AND
GERMAN DITHMARSCHEN-CLASS OILERS

Class	Length	Beam	Draft	Speed	Deadweight	Cargo
<i>Cimarron</i>	553 ft.	75 ft.	32 ft.	18 kts.	24,683 tons	19,725 tons
<i>Dale</i>	483 ft.	62 ft.	34 ft.	11.5 kts.	17,000 tons	12,000 tons
<i>Dithmarschen</i>	582 ft.	40.5 ft.	33.5 ft.	22 kts.	20,850 tons	8,980 tons

Source: Thomas Wildenberg, *Gray Steel and Black Oil: Fast Tankers and Replenishment at Sea in the U.S. Navy, 1912–1995* (Annapolis, Md.: Naval Institute Press, 1996), p. 275; Hans E. Nauck, “German WW II Naval Oilers,” *Warship International* 33, no. 2 (June 1996), pp. 208–10; and Richard M. Anderson, “German Naval Oilers,” *Warship International* 32, no. 1 (March 1995), p. 89.

astern refueling or “boomed out” to a ship alongside. Operational records and photographic evidence show that these and other classes of German support ships did in fact transfer all manner of liquid products and solid stores while making way at sea.⁸⁶

The Kriegsmarine employed supply ships from the first days of the war, ultimately using seven types.⁸⁷ *Altmark* departed Wilhelmshaven on 5 August 1939 for Port Arthur, Texas, loaded diesel fuel, and then supported the *panzerschiffe Admiral Graf Spee* and other German warships until 21 January 1940. *Westerwald* supported operations of the *panzerschiffe Deutschland* in the Norwegian Sea and Arctic Ocean between 22 August and 12 November 1939. It also refueled the disguised merchant raider *Widder* twice before departing for the central Atlantic.

The most remarkable example of the effectiveness of German operational logistics was the sortie by the battle cruisers *Scharnhorst* and *Gneisenau*, supported by six supply ships, for Operation BERLIN, which took place between 25 January and 22 March 1941. The patrol lasted sixty days and covered over 17,800 miles. The raiders were resupplied on six occasions, receiving 30,355 tons of fuel.⁸⁸ In that cruise the German battle cruisers used radar to good advantage, managing to evade in heavy weather British ships that were not similarly equipped, but they also used two *Dithmarschen*-class *trossschiffe*, *Ermland* and *Uckermark* (formerly *Altmark*), to widen their search front. In fact, *Uckermark* made the majority of sightings on 15 March that led to the capture or destruction of sixteen merchant ships, mostly tankers, totaling eighty-two thousand tons.⁸⁹ In total, twenty-two Allied cargo ships, amounting to 115,622 tons, were lost, and transatlantic shipping cycles were disrupted—Allied losses that exceeded those from any of the great wolf-pack convoy battles or cruises by single U-boats.⁹⁰ Admiral Raeder had achieved the aim of dispersing enemy escort forces, creating opportunities for other raider sorties, and disrupting the British war economy—at least this once. Without doubt, Operation BERLIN was the crowning moment of German surface naval operations.⁹¹

Advanced Steam Propulsion

To reduce dependence on fuel generally, German experience with diesel propulsion in high-performance hulls having been frustrating, German warship designers late in the interwar years attempted to follow an American movement to high-pressure steam. Admiral Kurt Assmann and Admiral Walter Gladisch, who both worked for many years in the historical section of the German Admiralty, would later recall that German naval architects were enthusiastic about the potential of the new high-pressure, superheated-steam systems.⁹² In the United States, the Secretary of the Navy in 1936 stated that the economical fuel

consumption achieved in the new *Mahan* (DD 364) class (with boilers that operated at four hundred pounds per square inch and 700°F), represented “the greatest progress the Navy had made in engineering in a generation.”⁹³ Despite its complexity, American marine propulsion machinery demonstrated extraordinary reliability under arduous conditions.⁹⁴ Meanwhile, British ships were plagued by steam leaks and oil leaks to a degree almost unknown in the U.S. Navy.⁹⁵ The German response was the *Z17*-class destroyer, which could in theory steam 4,800 miles at nineteen knots, carrying a bunkerage of 760 tons.⁹⁶

In practice, however, the high-pressure steam propulsion systems in German destroyers and heavy cruisers did not prove as reliable as the leading-edge American technology. Prone to frequent breakdowns, the German high-pressure superheated systems never achieved design specifications and frequently delivered less than half the intended endurance.⁹⁷ This weakness eliminated German heavy cruisers and destroyers from Atlantic operations and made mobile logistical support all the more critical for the Kriegsmarine’s operational planners.⁹⁸ The Z-Plan ships necessarily fell back on diesel propulsion. However, that the Germans took the technical risk in even attempting to adopt the new, complex, and expensive steam systems reflects the seriousness of the Kriegsmarine’s attempt to achieve superior speed and endurance that could be exploited tactically for either offensive or defensive purposes.

“INDEED, IT WAS THE ONLY WAY”

The concept of “force multiplication” for a medium-power navy, in part by establishing forward bases of operation but more importantly by reducing its dependence on bases at all, represented a significant new departure in naval thought. The Wegenerian notion that naval power is tied to bases and position was weakened significantly by this development in mobile logistical support of sea warfare. The U.S. Navy would bring the “Fleet Train” to maturity in the Pacific theater, using oilers and supply vessels to achieve extraordinary reach and endurance, but part of the credit properly belongs to the German navy and to Erich Raeder.

The force structure goals of the Z Plan, to have been reached in the mid-1940s, were preempted by the outbreak of war, and the Germans were accordingly unable to implement fully the double-pole strategy. Nevertheless, the German navy was “perfectly clear” that its basic purposes were, first, to protect its own sea-lanes and, second, to attack the enemy’s.⁹⁹ Extensive defensive measures were implemented from the first days of the war to deny coastal waters to enemy forces and assert local control to protect strategic shipping. These commitments made the “knockout blow” anticipated by British naval intelligence a complete impossibility. Nonetheless, the Kriegsmarine set about a dynamic

program of dispersal in the hope of creating maneuver opportunities needed to exploit German material superiority at the unit level. This unconventional approach made capital ships, by virtue of their high endurance, into “super-cruisers” capable of conducting open-ocean trade warfare.

The result was an employment of German naval surface forces that ran counter to “traditional ideas on the subject,” one that “may well appear as a splitting up of forces—perhaps even ‘squandering’ of them.” But even after the war, German naval leaders were to be practically unanimous in the opinion that, given the circumstances, the approach was correct and reasonably successful—even, in specific cases, “very good.”

Indeed it was the only way of disposing these forces which could have had any chance at all of any successful and damaging attacks on the enemy. By this means they lent support to the U-boat warfare on enemy communications, forced the enemy to split up his forces, hampered or prevented him from concentrating his forces for major naval engagements, forced the enemy to confine his merchant shipping lines within very rigid limits, thereby causing frequent delays and difficulties in the transport of supplies, and in the case of U-boats tracking down convoys presented them with valuable and easy targets.¹⁰⁰

With limited resources, Raeder had designed a capable fleet and formulated a flexible naval strategy; given the spirit, intelligence, imagination, will, and knowledge of the officer corps, results out of proportion to the national investment were a real possibility. Better could not have been hoped for without a substantial change in government policy.

The fundamental differences in naval strategy between Admirals Raeder and Wegener corresponded, then, from their different perspectives from which they looked at the problem. Raeder was bound by national strategy, policy, and government economic and budgetary priorities. Wegener’s theories were limited by no such realities. Wegener steadfastly held to his notion that Great Britain and its domination over the world’s oceans stood in the way of German national greatness. In fact, however, as we have seen, German foreign and defense policy during the Weimar and, at least initially, National Socialist regimes was oriented not against Britain but against the threat of a combined Polish and French invasion. Naval issues were secondary, and Raeder had his minister’s instructions: “Base [naval] operational ideas more on political and military [i.e., land] realities.”¹⁰¹ The new and flexible approach to seapower strategy, warship design, and operational concepts that resulted would have been anathema to naval leaders of the Tirpitz era.

While Raeder repeatedly sought and received assurances from Hitler that war against Great Britain was not part of the grand plan, Wegener could see no other

outcome. He had declared in his 1929 book, “As long as England acts as an outpost of America, no European world can be established;”¹⁰² unrestrained by practicalities, he continued to press his theories, and in so doing distanced himself from his former crewmate and friend. Ultimately, Wegener’s views left him alone and bitter; if his operational doctrines were now unrealistic, he had accurately foreseen the future enemy, and soon he saw his country engaged in the war that he had always maintained was unavoidable.

Raeder’s often-quoted fatalistic declaration that the German surface forces were so weak that they could “do no more than show that they know how to die gallantly and thus are willing to create the foundations for later reconstruction” is overused and overplayed.¹⁰³ His conception of naval power was born of a philosophical construct other than the typical Anglo-American view, based on the writings of Mahan and Sir Julian Corbett, or even the German, Tirpitzian view of preceding decades. Raeder’s innovative uses of seapower were actually early examples of asymmetric warfare. His theory that a broadly based attack on all the elements of maritime trade could be effective conforms to current views on the subject.¹⁰⁴ The use by the Kriegsmarine of operational logistics concepts to solve the Wegenerian problem of the “dead angle” was a “world first,” one that has not received adequate recognition. In this sense, Erich Raeder pointed the way for all the middle-power navies that aspire to exercise seapower in distant waters.

NOTES

1. In 1902 and 1913, their standings for promotion to Oberleutnant zue Zee and Kapitanleutnant were practically identical. In 1913 Raeder ranked first overall, Wegener fifth.
2. For a general description of Wegener’s career see the introduction by Holger H. Herwig to Wolfgang Wegener, *The Naval Strategy of the World War* (Annapolis, Md.: Naval Institute Press, 1989), pp. xv–xxvii.
3. Erich Raeder, *My Life* (Annapolis, Md.: Naval Institute Press, 1960), p. 13.
4. For a detailed description of the social importance of “crew” membership see Eric C. Rust, *Naval Officers under Hitler: The Story of Crew 34* (New York: Praeger, 1991), pp. 4, 19–20, 167.
5. See Holger H. Herwig, “The Failure of German Sea Power, 1914–1945: Mahan, Tirpitz, and Raeder Reconsidered,” *International History Review* 10, no. 1 (February 1988), pp. 68–105; Keith W. Bird, “The Origins and Role of German Naval History in the Interwar Period 1918–1939,” *Naval War College Review* 32, no. 2 (March–April 1979), p. 52; Gerhard Schreiber, “Italy and the Mediterranean in the Power-Political of German Naval Leaders, 1919–45,” in *Naval Strategy and Policy in the Mediterranean: Past, Present and Future*, ed. John Hattendorf (London: Frank Cass, 2000), pp. 108–11; Tobias Philbin, *The Lure of Neptune* (Columbia: Univ. of South Carolina Press, 1994), pp. 33–37; Rust, *Naval Officers under Hitler*, p. 120.
6. Herwig, “Introduction,” p. xxi.
7. Herbert Rosinski, “German Theories of Sea Warfare,” *Brassey’s Naval Annual* (1940), p. 40.

8. Wilhelm Diest, "Rearmament of the Individual Service, 1933–39," in *Germany and the Second World War*, ed. Militärgeschichtliches Forschungsamt (Oxford, U.K.: Clarendon, 1990), vol. 1, p. 471.
9. Bernard Brodie, *A Guide to Naval Strategy*, 5th ed. (Princeton, N.J.: Princeton Univ. Press, 1965), pp. 91–92.
10. Geoffrey Till, "The Battle of the Atlantic as History," in *The Battle of the Atlantic, 1939–1945: The 50th Anniversary International Naval Conference*, ed. Stephen Howarth and Derek Law (London: Greenhill Books, 1994), pp. 584–95.
11. Joseph A. Maiolo, *The Royal Navy and Nazi Germany, 1933–39: A Study in Appeasement and the Origins of the Second World War* (New York: St. Martin's, 1998), pp. 73–74. See also Joseph A. Maiolo, "Naval Armaments Diplomacy in Northern Waters: The Origins of the Anglo-Scandinavian Naval Agreement of 21 December 1938," in *Navies in Northern Waters, 1721–2000*, Rolf Hobson and Tom Kristiansen, eds. (London: Frank Cass, 2004), pp. 192–95.
12. Hill's theory described a conflict between national requirements and alliance commitments, each of which calls for different capabilities. In this case, the conflict was between the demands for offensive and defensive capabilities. J. R. Hill, *Maritime Strategy for Medium Powers* (Annapolis, Md.: Naval Institute Press, 1986), pp. 199–212.
13. Otto Schniewind and Karlgeorg Schuster, "The German Conduct of the War at Sea, 1939–45" in *Essays by German Officers and Officials on World War II*, roll 3 (Wilmington, Del.: Scholarly Resources, n.d.), p. 13.
14. For a definition of the degrees of reduction in the volumes of enemy trade resulting from attempts to disrupt trade see Milan N. Vego, *Naval Strategy and Operations in Narrow Seas*, 2d ed. (London: Frank Cass, 2003), pp. 225–27.
15. Helmuth Heye, "The Naval Aspects of the War," in *Essays by German Officers and Officials on World War II*, roll 3 (Wilmington, Del.: Scholarly Resources, n.d.), pp. 6–7.
16. Rust, *Naval Officers under Hitler*, p. 120.
17. Douglas C. Peifer, *The Three German Navies: Dissolution, Transition, and New Beginnings, 1945–1960* (Gainesville: Univ. Press of Florida, 2002), pp. 2, 8.
18. Rust, *Naval Officers under Hitler*, pp. 56–57.
19. Herwig, "Introduction," pp. xxxviii–xxxix.
20. For an excellent analysis of the mounting costs of naval construction see Holger H. Herwig, *Luxury Fleet: The Imperial German Navy 1888–1918* (London: Ashfield, 1980), pp. 54–78.
21. For the Risk Theory, see Milan Hauner, "Stalin's Big-Fleet Program," *Naval War College Review* 57, no. 2 (Spring 2004), p. 116 note 3.
22. Herwig, "Introduction," p. xxix.
23. *Ibid.*, pp. xv. See also: Wegener, *Naval Strategy of the World War*, pp. 22, 39, 78; and Holger H. Herwig, "The Influence of A. T. Mahan upon German Sea Power," in *The Influence of History on Mahan: The Proceedings of a Conference Marking the Centenary of Alfred Thayer Mahan's The Influence of Sea Power upon History, 1660–1783*, ed. John B. Hattendorf (Newport, R.I.: Naval War College Press, 1991), pp. 67–80.
24. Wegener, *Naval Strategy of the World War*, pp. 29–34, 52, 69, 97.
25. Herwig, "The Influence of A. T. Mahan upon German Sea Power," p. 70.
26. Herwig, *Luxury Fleet*, p. 40.
27. Herwig, "Introduction," p. xv note 1. See also Wegener, *Naval Strategy of the World War*, p. 52.
28. Herwig, *Luxury Fleet*, p. 38.
29. Wegener, *Naval Strategy of the World War*, p. 62.
30. Herwig, "Introduction," p. xxviii.
31. *Ibid.*, pp. xxvii, xxx.
32. Werner Rahn, "German Naval Strategy and Armament, 1919–39," in *Technology and Naval Combat in the Twentieth Century and Beyond*, ed. Phillips Payson O'Brien (London: Frank Cass, 2001), p. 117.
33. Philbin, *Lure of Neptune*, p. 161 note 53.
34. Robert Waring Herrick, *Soviet Naval Theory and Policy: Gorshkov's Inheritance* (Newport, R.I.: Naval War College Press, 1988), pp. 127, 131, 140 note 57.

35. Alfred Dewar, "Die Seestrategie Des Weltkrieges," *Naval Review* 17 (1929), pp. 825, 827.
36. Herbert Rosinski, *The Development of Naval Thought* (Newport, R.I.: Naval War College Press, 1977), p. 87.
37. Herwig, "Introduction," p. xxix.
38. Ibid.
39. Wegener, *Naval Strategy of the World War*, p. 22.
40. Ibid., p. 29.
41. Ibid., pp. 22–23, 25.
42. Rolf Hobson, "The German School of Naval Thought and the Origins of the Tirpitz Plan, 1875–1900," *Forsvarsstudier* 2/1996 (Oslo: Institutt for Forsvarsstudier, 1996), p. 61 [emphasis original]; Rahn, "German Naval Strategy and Armament," p. 117.
43. Heye, "Naval Aspects of the War," p. 7.
44. For an analysis of the erosive effect an imbalance in gun power has on the inferior force see Wayne P. Hughes, Jr., *Fleet Tactics and Coastal Combat* (Annapolis, Md.: Naval Institute Press, 2000), pp. 70–74.
45. Wegener, *Naval Strategy of the World War*, p. 139.
46. Barry Gough, "The Influence of History on Mahan," in *The Influence of History on Mahan*, ed. John B. Hattendorf (Newport, R.I.: Naval War College Press, 1991), pp. 19–23.
47. Ibid., p. 22.
48. Hermann Boehm, "The War at Sea," in *Essays by German Officers and Officials on World War II*, roll 1 (Wilmington, Del.: Scholarly Resources, n.d.), pp. 1–2.
49. Rahn, "German Naval Strategy and Armament," p. 110.
50. Ibid., p. 115.
51. Heye, "Naval Aspects of the War," p. 5.
52. Eric J. Grove, *The Price of Disobedience: The Battle of the River Plate Reconsidered* (Phoenix Mill, U.K.: Sutton, 2000), pp. 2, 25, 33, 165.
53. Hans-Erich Volkmann, "The National Socialist Economy in Preparation for War," in *Germany and The Second World War*, ed. Militär-geschichtliches Forschungsamt (Oxford, U.K.: Clarendon, 1990), vol. 1, pp. 356–57.
54. Raeder, *My Life*, p. 309.
55. Tobias R. Philbin, "Reflections on the Strategy of a Continental Commander: Admiral Franz Hipper on Naval Warfare," *Naval War College Review* 30, no. 2 (Fall 1977), p. 81.
56. Herwig, *Luxury Fleet*, app. 1, tables 2–9, 11–14, 16, 18, 19.
57. Philbin, "Reflections on the Strategy of a Continental Commander," p. 81.
58. Charles S. Thomas, *The German Navy in the Nazi Era* (Annapolis, Md.: Naval Institute Press, 1990), p. 25.
59. Rahn asserts that Raeder was also influenced by the ideas of René Duveluy, which caused him to modify further the concepts he derived from Castex. Werner Rahn, "German Naval Power in the First and Second World Wars," in *Naval Power in the Twentieth Century*, ed. N. A. M. Rodger (Annapolis, Md.: Naval Institute Press, 1996), pp. 90–91. Also Herwig, "Introduction," pp. xxxviii, xlv.
60. Wayne P. Hughes, Jr., "Naval Maneuver Warfare," *Naval War College Review* 50, no. 3 (Summer 1997), p. 38.
61. Raoul Castex, *Strategic Theories* (Annapolis, Md.: Naval Institute Press, 1994), pp. 102–104. For the Jeune École, see Erik Dahl, "Netcentric before Its Time: The *Jeune Ecole* and Its Lessons for Today," in this issue.
62. Castex, *Strategic Theories*, pp. 103, 105.
63. Rahn, "German Naval Strategy and Armament," p. 120, quoting Klaus Schröder, "Zur Entstehung der strategischen Konzeption Grossadmiral Raeders," *MOV-Nachrichten* 46 (1971), p. 48, and Michael Salewski, *Die deutsche Seekriegsleitung 1935–1945* (Frankfurt: Bernard & Graefe, 1970), vol. 1., pp. 32–33.
64. Bernard Brodie, *Sea Power in the Machine Age* (New York: Greenwood, 1969 [1941]), p. 11.
65. Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (Bloomington: Indiana Univ. Press, 1977), p. 245.
66. Paul Halpern, "The French Navy, 1880–1914," in *Technology and Naval Combat in the Twentieth Century and Beyond*, ed. Phillips P. O'Brien (London: Frank Cass, 2001), pp. 41–42.
67. Heye, "Naval Aspects of the War," pp. 7–8.

68. Joseph A. Maiolo, "The Knockout Blow against the Import System: Admiralty Expectation of Nazi Germany's Naval Strategy, 1934-9," *Historical Research* 72, no. 178 (June 1999), pp. 210–11.
69. *Ibid.*, p. 218.
70. *German Naval History*, "Z-Plan," www.german-navy.de/kriegsmarine/zplan/. See also H. T. Lenton, *German Warships of the Second World War* (London: Macdonald and Jane's, 1975), pp. 22–23.
71. Carl O. Schuster, "German Naval Warfare in WWII," *Strategy & Tactics*, no. 226 (January/February 2005), pp. 45–46.
72. Castex, *Strategic Theories*, pp. 157–60.
73. Raeder, *My Life*, p. 153.
74. Clark Reynolds, *Command of the Sea: The History and Strategy of Maritime Empires* (Malabar, Fla.: Robert E. Krieger, 1983), vol. 1, p. 490.
75. Thomas, *German Navy in the Nazi Era*, p. 188. See also Jak P. Mallmann Showell, *Fuehrer Conferences on Naval Affairs, 1939–1945* (London: Greenhill, 1990), pp. 34, 37–38.
76. John Winton, *Convoy: The Defence of Sea Trade, 1890–1990* (London: Michael Joseph, 1983), p. 127. See also Peter Gretton, *Convoy Escort Commander* (London: Cassell, 1964), p. 50.
77. Herwig, "Introduction," p. xxxi.
78. Quoted in Philbin, *Lure of Neptune*, p. 83.
79. *Ibid.*, pp. 88–94.
80. Paul Zieb, *Logistische Probleme der Marine* (Neckargemünd, W.Ger.: Scharnhorst Buchkameradschaft, 1961), pp. 83–85.
81. By 1942, the Kriegsmarine had seven categories of fleet support ships, although the *Dithmarschen* class remained the most capable of the type. Jak P. Mallmann Showell, *German Navy Handbook, 1939–1945* (Phoenix Mill, U.K.: Sutton, 1999), pp. 123–25.
82. For a descriptive history of the operations of *Westerwald/Nordmark* see Geoffrey P. Jones, *Under Three Flags: The Story of Nordmark and the Armed Supply-ships of the German Navy* (London: Corgi Books, 1975).
83. At the end of the war, *Dithmarschen* and *Nordmark* were surrendered to the U.S. and Royal navies, respectively. *Dithmarschen* was commissioned into the U.S. Navy as USS *Conecuh* (AO 110) and became the test platform for experimentation with multicargo replenishment ships, from which the current forms of the replenishment oiler (AOR) type were derived. For a detailed account of the German origins of the AOR concept, see Thomas Wildenberg, *Gray Steel and Black Oil: Fast Tankers and Replenishment at Sea in the U.S. Navy, 1912–1995* (Annapolis, Md.: Naval Institute Press, 1996), pp. 204–16.
84. There is some confusion over the types of propulsion systems used in the German *trosschiffe*. Jones maintains that *Altmark/Uckermark* was unique in being powered by four nine-cylinder MAN diesel engines, producing 21,400 horsepower. The other five *Dithmarschens* had two Wagner high-pressure (1,200 psi) boilers powering two double-reduction geared turbines, producing 21,590 hp (Jones, *Under Three Flags*, p. 25). The website *German Naval History* indicates diesel propulsion for *Dithmarschen*, *Uckermark*, and *Franken* while crediting steam propulsion for *Nordmark* and *Ermland*. It gives no data for *Havelland* ("Auxiliary Ships," www.german-navy.de/kriegsmarine/ships/auxships/index.html).
85. H. J. Reinicke, "German Surface Force Strategy in World War II," U.S. Naval Institute *Proceedings* 83, no. 2 (February 1957), pp. 182–84.
86. Wildenberg disagrees: "There is no evidence that these ships were intended to provide underway replenishment, however, and all transfers of cargo and fuel were apparently done while both ships were tied up alongside" (*Gray Steel and Black Oil*, p. 208). For photographs see John White, *U-boat Tankers, 1941–45: Submarine Suppliers to Atlantic Wolf Packs* (Annapolis, Md.: Naval Institute Press, 1998), facing p. 96. See also Showell, *German Navy Handbook*, pp. 117, 136. For text see Graham Rhys-Jones, *The Loss of The Bismarck: An Avoidable Disaster* (Annapolis, Md.: Naval Institute Press, 1999), pp. 42, 58 (charts).
87. The seven types were fleet supply ships (*Dithmarschen* class); auxiliary fleet supply ships; escort tankers; "V" stores ships for the surface fleet; "Z" stores ships for the submarine fleet; plus port tankers and port supply ships that served as station ships. Showell, *German Navy Handbook*, pp. 116–26.

88. Peter Handel-Mazzetti, "The *Scharnhorst-Gneisenau* Team at Its Peak," U.S. Naval Institute *Proceedings* 82, no. 8 (August 1956), pp. 852–60. See also Stephen W. Roskill, *The War at Sea, 1939–1945* (London: Her Majesty's Stationery Office, 1956–61), vol. 1, p. 373; and Rhys-Jones, *Loss of the Bismarck*, pp. 40–70. Roskill indicates "at least five ships" were employed, while Handel-Mazzetti says "no fewer than nine supply ships." Rhys-Jones tends to confirm Handel-Mazzetti. It seems likely that six different ships (*Adria*, *Schlettstadt*, *Esso-Hamburg*, *Friedrich Breme*, *Ermland*, and *Uckermark*) conducted a total of nine refueling operations at six different positions.
89. Rhys-Jones, *Loss of the Bismarck*, pp. 65–66.
90. In March 1943, convoy ON-166 lost fourteen ships totaling 87,901 tons to attacks by nineteen U-boats ("Greatest Convoy Battles," *U-boat Net*, uboat.net/ops/convoys/battles.htm). *U-107*, commanded by KptLt. Günther Hessler, sank fourteen ships totaling 86,699 tons on a single patrol between March and July 1941 ("The Most Successful Patrols," *U-boat Net*, uboat.net/ops/top_patrols.htm).
91. Roskill, *War at Sea*, p. 379.
92. Kurt Assmann and Walter Gladisch, "Aspects of the German Naval War," in *Essays by German Officers and Officials on World War II*, roll 1 (Wilmington, Del.: Scholarly Resources, n.d.), p. 1.
93. John Anderson Miller, *Men and Volts at War: The Story of General Electric in World War II* (New York: Whittlesey House, 1947), p. 15.
94. Franklyn E. Dailey, Jr., *Joining the War at Sea, 1939–1945*, 6th ed. (Wilbraham, Mass.: Dailey International, 2002), pp. 32–34.
95. David K. Brown, *The Design and Construction of British Warships, 1939–1945: The Official Record* (Annapolis, Md.: Naval Institute Press, 1995), vol. 1, p. 11.
96. In comparison, contemporary British fleet destroyers from the A class to the I class had a bunkerage capacity of approximately 470 tons. Lenton, *German Warships of the Second World War*, p. 71; M. J. Whitley, *Destroyers of World War Two: An International Encyclopedia* (London: Cassell, 2000), pp. 97–111.
97. Whitley, *Destroyers of World War Two*, p. 60.
98. Reinicke, "German Surface Force Strategy in World War II," pp. 185–86.
99. Boehm, "The War at Sea," pp. 5–6.
100. Schniewind and Schuster, "German Conduct of the War at Sea," pp. 15–16.
101. Wilhelm Deist, "The Rearmament of the Wehrmacht," in *Germany and the Second World War*, ed. Militärgeschichtliches Forschungsamt (Oxford, U.K.: Clarendon, 1990), vol. 1, pp. 388–91.
102. Herwig, "Introduction," p. xxx.
103. Showell, *Fuehrer Conferences on Naval Affairs*, 38.
104. Vego, *Naval Strategy and Operations in Narrow Seas*, p. 226.