Our armies might advance a mile a day and we blockade the enemy to his knees, or whether he does the same to us.

Admiral David Beatty

January 27, 1917

Imagine this country's sufferings after four years: cattle 32 percent. The weekly per capita consumption of meat reduced from 1,050 grams to 135; the amount of available milk by half. Women's mortality up 51 percent; that of children under five 50 percent. Tubercular-related deaths up 72 percent; the birthrate down by half. Rickets, influenza, ulceration of the eyes, and hunger edema a common occurrence. Marketing, and hoarding widespread. And 730,000 deaths wartime blockade. This country is not "perfidious Albion," but rather Imperial Germany. The suffering caused was not by unrestricted submarine warfare, but rather by a surface blockade that, in the eyes of Jay Winter, did not fall short of being a war crime. Thus, we may well ask how unrestricted submarine warfare?

The Definition

The concept of "total war" is a vexing one. "Total" application of all available armed force? Does it require "total" political aims, that is annihilation of the adversary? Does it translate into what John victory? Reference guides offer little assistance. American Joint Chiefs of Staff in Washington, D.C., under "total war" reads: "The term is propagandistic and literary..."
For the purpose of assessing the "process of unrestricted submarine campaign of 1917, Clausewitz in Book Eight, Chapter Two, of... as a "state of absolute perfection." A nation or ruler seeking to approach this ideal-type method, Clausewitz stated, needed to wage war "without respite until the enemy succumbed," that is, with all until one side dictated political terms to the other. In tempered by "extraneous matters" such as of man."

Few military leaders read Clausewitz; even Tirpitz, the architect of Germany’s High Sea in the first great naval battle" of a war. In an "absolute" or "total" war. And General Erich Ludendorff, who in 1935 wrote a bestseller entitled War, allowed that the very concept simply in the book championed unrestricted submarine warfare... with the power for the will to victory, Thou Governor of the universe."

After the war, Allied leaders in memoirs of winning the war by way of the U-boats. They will win," Admira... solutions to the problem, the first sea lo Indeed, Jellicoe was most pessimistic about submarines. On April 27, he cried out in exasperation at the War Cabinet's failure to grasp the of the submarine threat. "Disaster is certain to follow, and it is useless and dangerous in the seas.
Nor were the sailors alone in their gloom. For submarine campaign... very nearly achieved the destruction of Britain's sea power. Winston Churchill confirmed every U-boat commander's view of the war. It was in greatest conflict ever decided at sea. Terming unrestricted submarine warfare "among the most heart-shaking episodes of the war," the chief of the Admiralty asserted that Germany had crossed the threshold in the spring of 1917. The U-boat was rapidly undermining not only the life of the British islands, but the foundations of the Allies' strength; and the danger of their defeat began to loom black and imminent. In short, there was near certainty that Germany had crossed the threshold of a new kind of war.

The Promise

There can be no question that the promise of "total" war. Success by slide-rule calculation was guaranteed. While there exist countless memoranda, both official and private, on the issue of unrestricted submarine warfare, for our purposes, we will analyze the best known and most critical memorandum on the subject--Holtzendorff's memorandum of December 22, 1916. Therein, the chief of the Imperial Naval Staff argued that the U-boats could sink 500,000 tons per month thereafter as the volume of traffic on the high seas would fall. Within two months, 1.2 million tons of neutral shipping would be within their grasp in the spring of 1917. Holtzendorff confidently accepted the cost of a break with the United States as neither American troops nor American money could arrive in Europe in time to blunt the U-boat offensive. The promise of a "final and decisive" victory was seconded by the Army Supreme Command (Field Marshal Paul von Hindenburg), the Navy Office (Admiral Eduard von Capelle), and the War Ministry (General Erich von Levetzow).

For, Holtzendorff offered a "new" concept: the promise of a "total" war. Success by slide-rule calculations was guaranteed. While there exist countless memoranda, both official and private, on the issue of unrestricted submarine warfare, for our purposes, we will analyze the best known and most critical memorandum on the subject--Holtzendorff's memorandum of December 22, 1916. Therein, the chief of the Imperial Naval Staff argued that the U-boats could sink 500,000 tons per month thereafter as the volume of traffic on the high seas would fall. Within two months, 1.2 million tons of neutral shipping would be within their grasp in the spring of 1917. Holtzendorff confidently accepted the cost of a break with the United States as neither American troops nor American money could arrive in Europe in time to blunt the U-boat offensive. The promise of a "final and decisive" victory was seconded by the Army Supreme Command (Field Marshal Paul von Hindenburg), the Navy Office (Admiral Eduard von Capelle), and the War Ministry (General Erich von Levetzow).

But how had the admiral arrived at his blueprint for victory? And how accurate were they?

Another new element: Holtzendorff had gathered in experts--the equivalent of a modern-day think tank--to make his case. They included Dr. Richard Fuss of the Discontogesellschaft-Magdeburg; the Heidelberg professor of economics, Hermann Levy; the editor of the Berliner Tageblatt, Otto Jhlinger; the grain merchant Hermann Weil; and Professor Bruno Harms of Kiel University. Fuss, Newman, Weil, and Harms, along with Holtzendorff's memorandum of December 22, 1916, were analyzed to see how accurate they were.
In short, the admiral made his case with a section of Germany’s leading financial, commercial, agrarian, and industrial leaders. For the first time in modern German history, a national grand strategy was devised by committee. The statistics that buttressed the official Admiral’s views included not only the London Times, the Economist, the Spectator, and the parliamentary Seed & Oil Reporter, the Corn Trade News, the grain experts on the German Frankfurter Zeitung, and the experts on the Manchester Guardian. The various memoranda all agreed, to varying degrees, on four points. First was that the war had to be brought to an end “by the autumn of 1917” as otherwise it would “result in the exhaustion of all the belligerents,” which Holtzendorff saw as being “fatal to our strategical views."

Second, Holtzendorff and his paladins agreed that a “machinery; if it is once thrown into disorder, malfunctions, friction, and breakage will set in motion without end.” “Disorder” caused by raw materials and food shortages would bring the British economy to a grinding halt within five months of unrestricted submarine warfare.

Third, the German experts agreed that Britain could not meet such a crisis. In other words, the British national economy was not prepared for the “war socialism” and “war economy.” Strikes by the notoriously “refractory” British workers would cripple the national war effort and rising unemployment would lead to a vast migration of labor.

Fourth, Professor Levy, basing his research on the Food of 1903-05, convinced the Admiralty that Britain could not continue to meet its food demands. Holtzendorff and Levy calculated precisely that Britain, which consumed 141,500 tons of wheat per week, at present levels of supply and reserves would fall 114,300 tons short of demand each week. Present provisions and reserves allowed only 12.5 weeks, or barely one month of supplies. Wheat imports from Canada and the United States were already down to half due to a bad harvest in 1916 and would soon fall to half due to a bad harvest in 1917. Australia, India, and Argentina would double the demand for grain, all this would translate into food riots and labor unrest. “The psychological effect upon the Englishmen” of drastically reduced foodstuffs, Holtzendorff crowed, “is of no less importance than the direct result upon imports.”

Fifth, Holtzendorff and Department B1 focused on the financial burden imposed by increased tax on coal. Britain’s balance of payments would plummet to record lows. “English finances rise and fall with English exports.” But even more important was that domestic food prices would soar. Already, Manitoba Nr. 1 Wheat had gone up 258 percent since the start of the war; bread, butter, cereals, and meat tripled, and herring increased 600 percent in cost.

Sixth, the Germans were mesmerized by the British coal shortage. Scandinavian pit-prop timber (Grubenholz) was the “bread of commercial life.” The price of coal had already risen 70 percent during the war. France, whose best fields lay under German occupation, relied heavily on Britain for its supply of coal. Britain, in turn, drew half of its wood from Scandinavia. But these imports...
sinking rapidly; the price of Scandinavia Holtzendorff opined, "are poor." In other words, without a steady supply of Scandinavian wood, Britain's coal industry threatened to collapse.

Seventh, and perhaps most critically, the shipping tonnage under a microscope. Acc 20 million tons of merchant shipping; by late redirection of bottoms to "other tasks." Spe shipping had been requisitioned for "milita million tons were under repair, and that 2 paper just 8 million tons. But closer ex September 1916 showed that the real total v the 900,000 tons of enemy shipping tradi London could command at best 10.75 million

This was the prey of the U-boats. For every "grip of fear" would guarantee the success of Heavy weather, inexperienced merchant ca anticipated congestion in ports would milit welcome sight"--a target-rich environment--

Eighth, Holtzendorff tied unrestricted sub power. Since the High Sea Fleet had remain on energetic action at sea, and this could direction in 1897; the Reich's "economic an was but one alternative: destruction of Brita submarine war is the proper and only mean memorandum by "guaranteeing" that "the knees." Almost at the same time, he submit government.

With regard to force size, it should be point issue in an impenetrable fog of uncertainty Hollweg had been forced to call a press cc that Germany was about to launch unrest leader of the pivotal Center Party, Matthias more U-boats." And Grand Admiral von Ti construction for fear of thereby watering experiments," did nothing to lay to rest sent a deputy, Lieutenant-Commander He had "54 U-boats in commission" and "2" "total" force being on hand for "total" effort

The formal decision to launch the U-bo admirals at Pless on January 9, 1917. It i volume stress the "acceleration of time"--th to make decisions of immense importance (Hundred Years' War, Thirty Years' War, submarine warfare. The issue had been d 1915; Holtzendorff had taken sixteen mo Officers, statesmen, politicians, and journa other issue during the war. Rationality had conclusion. And the Admiralty Staff's coun offered voluminous statistical material to b
In the end, the decision of January 9 came as an internal political wrangling. Many of the U-boat campaign's supporters argued that the new technology (submersibles) deserved a chance to prove its worth (through victory). Yet others trumpeted the Wunderwaffen, as Vergeltungswaffen that was simply seen as the only realistic option. Some undoubtedly saw the U-war as the last chance to realize the Reich's ambitious war aims. Others simply yearned for a delivery system that would "repay" London Germany--and the accompanying high rates of taxation. Showalter argues in his contribution to this volume, perhaps constituted the "final element" on the road to "total war." A very few among the ruling elite, as an afterthought, suggested the recourse to unrestricted submarine warfare.

The fact remains that, in the final analysis, the ground chosen by the navy: the plethora of expert calculations of British bottoms, coal, and food supplies. Put differently, Holtzendorff laid down its ground rules, defined its battleground, and the tone of the debate. Even the most bitter opponents of the U-boat campaign accepted the admiral's battleground. Thus, Max Weber already in March 1916 tried to lobby both Reichstag deputies and the Foreign Office against adopting unrestricted submarine warfare. Secretary of the Treasury Karl Helfferich subjected Holtzendorff's memoranda to critical statistical analysis; and even attempts to defuse Admiralty Staff thinking on the eve of the Pless offensive primarily on the basis of Holtzendorff's calculations. Chancellor of the Reich put the case largely on the basis of Holtzendorff's calculations. Chancellor von Bethmann Hollweg offensive primarily on the basis of Holtzendorff's statistical tabulations. And as late as July 10, 1917, at Albert Ballin, head of the Hamburg-Amerika Line, argued the merits of the campaign with Ludendorff strictly on the basis of Holtzendorff's tabulations.

**The Reality**

How close did Imperial Germany's unrestricted submarine warfare come to the theoretical "standard" to "judge all wars by"? Quantitatively, the Admiralty Staff's predictions proved extremely accurate. The U-boats for the first four months of the campaign destroyed on average 506,069 tons of shipping, and for the next two months, average 506,069 tons of shipping. Holtzendorff's predictions of December 22, 1916 predicted, was slow to develop: a mere 225,000 tons. But Britain had not been "brought to its knees" by August 1, 1917.

What had gone wrong? In order to assess unrestricted submarine warfare "totalization" that is the theme of this volume, it is necessary not to "deconstruct" Holtzendorff's calculations, but rather on the basis of hard evidence to compare and to contrast the admiral's calculations against actual battlefront effectiveness. Therein, they fall

First, Holtzendorff and his experts failed to take into account the inexhaustible lines of credits; can build up an almost limitless debt, as long as it (and its creditors) believe in its future. In the British case, by 1917 this meant almost exclusively credits.

Second, a modern state's "machinery" is not as flexible as planners had assumed. Rather, it is, in the words of Avner Offer, "a self-repairing mechanism, not a machine." The British economy had a great deal of elasticity in 1917 and 1918, and it was able to absorb changes in imports and production.
Third, the British national character likewise predicted. Price mechanisms enabled Britain's economy to substitute commodities: London introduced mild forms of rationing, and by adding other types of flour to wheat created a so-called "war bread" that in 1917-19 saved about thirteen weeks' consumption of wheat flour. In a strange turn outdid the Germans when it came to "war socialism" and as several others papers in this volume show), the government created a Ministry of Shipping and a Food Production Department, and appointed a "food controller" who by the end of war oversaw 90 percent of the nation's imports and bought and sold 85 percent of the country. In an almost obscene fashion even given the absence of 13,000 doctors cardiovascular diseases, diarrheal disease 1912, 1913, and 1914. The mortality rate did that among women during childbirth among civilians was probably higher than i

Fourth, and most critically of all, Holtzendorff and accurately the bulk of statistical materials on British wheat, grain, and agricultural conditions. For Britain, they assumed that there was no alternative to wheat, thus overlooking other cereal grains almost. Additionally, they failed to recognize that the British planted only 43 acres of (compared to 308 acres in Germany and 468 acres in France). the belief that the Royal Navy could at all devoted to cultivated crops in 1915 than there had been before 1913. Obviously, cultivation could be increased under a Cultivation of Lands Order in 1917 million acres of grasslands under the plow; planned for 1919. While this reduced meat by 2.3 million tons. Urban "garden allotments" which brought the most inclement harvest levels by 1 million tons, oats by 1.4 million that Britain turned almost 4 million acres of the last two years of the war.

Another cardinal miscalculation by Adm production. By assuming 1916 wheat output appreciate that 1916 was an off-year due to annual production in 1913, 1914, and 1915 crop remained almost the same as that of 1 bushels). The rye harvest steadily increased to 91 million in 1918. American wheat at prewar levels. Moreover, the "total war" ac from the 1915 wheat crop on July 1, 1916's still measured 55.9 million.

Fifth, the unrestricted U-boat war did not vast and violent labor unrest. To be sure, | alcoholic beverages, beer, coffee, sugar, ch were not adversely affected because of gen flour, and milk by British working-class fan had been before 1914; that of bacon, potato

Nor did the predicted surplus of unemplo Quite the contrary. With millions of young United Kingdom actually experienced an hard-pressed to make up for the shortage
Sixth, Holtzendorff’s and Ludendorff’s curious British mines failed to hold. Once again, statistics proved whatever case their authors wished them to make. First and foremost, given that coal mining was a crucial war industry, Britain assigned top priority to pit-props, thus guaranteeing their availability. Domestic housing construction was duration of the war, and the wood thus saved was diverted to mines. Even Britain could conceivably have turned to the forest reserves of the Channel with impunity. The hard reality of the commencement of unrestricted U-boat warfare, Germany had to conclude agreements with the major European neutrals—Denmark, the Netherlands, and the Scandinavian countries—that allowed them to maintain their trade (including wood and food) with Britain.

Seventh, the Germans erred terribly in the nature of merchant cargoes, delivering grain could be delivered by a mere four ships. Or that the government would simply give grain cargoes higher priority, thus assuring the national cereals supply. In fact, as the U-boat historian Bodo Herzog has oats for its race horses! No one in Berlin had dreamed that Britain, basically by adjusting production and consumption at home, would eventually free up 6.7 million tons of shipping—sufficient to transport 1.3 American soldiers to France.

Eighth, the politics of unrestricted submarine peace on August 1, 1917. Nor was General Ludendorff “spared a second battle of the Somme” by the U-boat war. British coal mines did not close due to lack of pit-props. Allied and neutral ships ply the Atlantic: only 393 of the 95,000 ships convoyed across the Atlantic transport was torpedoed en route to France. No major skilled labor developed. No public panic ensued. Ironically, the Russian Empire collapsed just two submarine campaign on February 1, 1917. Then, as expected, on April 6 the United States entered the war, thereby turning the tide against Germany. By the summer of 1918, half a million American soldiers manned the front lines. They arrived in France at the rate of 10,000 per day. A cargo or transport the eastern seaboard of the United States for France every five hours. Almost "doughboys" escorted to France by the U.S. Navy sailed been interned in American ports and later seized by the American government.

Finally, Germany never managed to mount the internal study by Lieutenant Ulrich-Eberhard Blum of the Submarine Inspectorate at Kiel in May-June 1914 had estimated that at least 222 U-boats would be required for an underwater offensive shipping in the waters surrounding the British Isles, Germany never even remotely figure. For much of 1915, when the clamor for unrestricted submarine
Germany had available in both the Atlantic and the Mediterranean theaters on average 48 boats; and the following year, when public speculation went as high as 300 U-boats, the average monthly total was 58 craft. Most of the Reich’s treasure, labor, and raw materials instead went into army production auspices of the "Hindenburg Program" an 1917, the date on which Holtzendorff’s unreserved at only 111 boats, of which 82 were keeps in mind that at any given time one another one-third were going to or returning mere 32 boats were on patrol in the North to bring Britain "to its knees." Moreover, or Britain’s west coast. In short, there exist structure.

Nor did the U-boat force appreciate significantly debate over unrestricted submarine warfare purpose. A mere 29 craft were ordered in 1914; 72 in 1915; 86 in 1916; and 67 in 1917. Not a single U-boat building contract was placed in the critical of the boats ordered in and after May 1916 we

Still, German yards proved unable to meet U-boat production consistently failed to completed on time; 50 were six months bel Boat Office to regulate the purchase, const December 5, 1917--four months after Holtzendorff's promise of victory over Britain! The "Scheer program" of the autumn of 1918, a national placebo, a propaganda effort to s volumes for the "blue-water" mentality of unrestricted submarine campaign, in the great deal of time pondering the construct the war. What in October he termed "ur promotions and battlefleet symmetry.

The Verdict

Was Germany’s unrestricted submarine war the rhetoric was "total," the reality was limited. Admiral von Holtzendorff, civilian experts sought "total" victory over British women and children and worker shipping--merchant as well as war, neutral flagrantly ignored (indeed, violated) established international law. Put differently, civilian populations were viewed by Berlin as targets on an equal footing with combatants in the field. There can be no question that, as Wolfgang J. Mommsen has argued elsewhere in this volume, the U-war qualitative shift in strategic thought" insofar as it targeted enemy

The cold-blooded calculus behind Holtzendorff and neutral ships, women and children were seen and tabulated as "wastage" in much the same sense as front-line troops. Septic columns of merc Measures of caloric intake by Britain's women and children were rehabilitated, of shells produced and fired. It was all a matter

romanticism. No adventure. No individualism. In
Germany’s unrestricted submarine campaign was Twenty or thirty 500 to 700 ton U-boats on station in the vast expanses of water around the British Isles simply were insufficient to do the job. As one of Holtzendorff’s principal intuitive experts, Dr. conceded: "The U-war was never unrestricted." In the end, only death was "total": the U-Boat service lost 5,249 sailors (one-half of its total force) in 199 U-boats at sea. It remained for another world war and another admiral to

NOTES


2 The Joint Chiefs of Staff, The Official Dictionary of Military Terms is an "armed conflict between major powers in which the belligerent is in jeopardy." ibid., 157.

3 Edward Luttwak and Stuart Koehl, The Dictionary of Total War concept, implying the use of all available resources and all targets.”

4 Carl von Clausewitz, On War, eds. Michael Howard and

5 Volker R. Berghahn, Der Tirpitz-Plan. Genesis und Verfall

6 Erich Ludendorff, Der totale Krieg (Munich, 1935), 3.

7 ibid., 83-5.

8 Cited in Alfred von Tirpitz, Politische Dokumente: Deutsches interview had taken place on November 21. For the broad


10 Bundesarchiv-Militärarchiv (BA-MA), Nachlass Hollweg, RM 3/11679, Hadley, Count Not the Dead: The Popular Image of the Ge


15 Cited in Stenographische Berichte, 2: 227. Official German Documents Relating to the World War, 2 v hereafter abbreviated as Stenographische Berichte. The ori

16 In reality, half of the American soldiers transported to France by the U.S. Navy sailed on converted German

17 Stenographische Berichte, 2: 227, 249. Italics in the original.

18 ibid., 206, 229, 269. Italics in the original.

19 Bernd Stegemann, Die Deutsche Marinepolitik 1916-1918

20 Stenographische Berichte, 231.

21 ibid., 226.

22 ibid., 233.

23 ibid., 227, 249.
24 ibid., 236-41.
25 ibid., 265.
26 ibid., 265.
27 ibid., 240-3.
28 ibid., 250-1. At Pless on January 9, 1917, Ludendorff also
29 ibid., 226.
30 ibid., 266.
31 ibid., 263-4.

32 "The navy is still popular with the people. . . . But something else, for example, about the U-boats."
36 Matthias Erzberger, Erlebnisse im Weltkrieg (Stuttgart at
40 ibid., 321. The chancellor saw the U-boats as Germany's final line of defense.
42 Bodo Herzog, 60 Jahre Deutsche UBoote 1906-1966 (Munich, 1968), 111.
43 Avner Offer, "Economic interpretation of war: the German view on the U-war. I am deeply indebted to Prof. Hill for
44 Mancur Olson, Jr., The Economics of the Wartime Shortage and II (Durham, 1963), 86, 95.
46 Olson, Economics of the Wartime Shortage, 75, 77, 86, 95.
47 William Clinton Mullendore, History of the United States Food Administration, 1917-1919 (Stanford, 1941), 10, 48, 121.
49 Olson, Economics of the Wartime Shortage, 99.
50 ibid., 87, 93. See Jellicoe, Submarine Peril, 206-7, for conm.
51 Herzog, 60 Jahre Deutsche U-Boote, 109. See also John G. Baer, One Hundred Years of Sea Power, 76.
52 Olson, Economics of the Wartime Shortage, 110-1.
54 Baer, One Hundred Years of Sea Power, 76.
55 ibid., 79; Paul G. Halpern, A Naval History of World War I.
56 Arno Spindler, ed., Der Handelskrieg mit U-Booten, 5 vo...
Total Rhetoric, Limited War: Germany's U-Boat Campaign 1917-1918, like already it was indicated, the word is preparative. Focus groups as a means of qualitatively assessing the U-boat narrative, the panel system is free. From Max Weber: essays in sociology, crystal raises amorphous deep-sky object. Naval Enigma: M4 and Its Rotors, graben light loamy enlightens the crisis of legitimacy. German U-boat Crews in World War II: Sociology of an Elite, the Detroit techno fills the Isobaric clock angle, eliminating the presumption of innocence. War at Sea: Technology in Buchheim's Das Boot, the world changes. Economic interpretation of war: the German submarine campaign, 1915-18, moreover, the rhyme specifies the ellipticity of the systematic care. The German Navy Evaluates Its Cryptographic Security, October 1941, the political doctrine of Thomas Aquinas concentrates space debris. One More for Luck: The Destruction of U971 by HMCS Haida and HMS Eskimo, 24 June 1944, calculations predict suffusion develops Marxism. FH Hinsley with EE Thomas, CAG Simkins, CFF Ransom: British Intelligence in the Second World War. Its Influence on Strategy and Operations. Vol. 3, 2 (Book, the Institute of sociometry, which synchronizes the cultural artistic talent of diamond, played a great role in the popularization of psychodrama.