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Industrial Mobilization in World War I: Implications for Future Great Power Conflict

Philip Koenig and Norbert Doerry

Naval Sea Systems Command
Washington, D.C.

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Introduction

- The post-Cold War “Peace Dividend” era is over
- “Overt challenges to the free and open international order and the re-emergence of long-term, strategic competition between nations.” (DoD 2018)
- Possibility of non-nuclear, industrial-scale war has re-emerged.

What can we learn from our experience in World War I



http://americanhistory.si.edu/onthewater/exhibition/6_2.html
Accessed March 3, 2019

WWI Naval Timeline

- 28 July 1914: Austria declared war on Serbia
- 1914: First convoys for troopships
- 1915: Naval Blockade of Britain
- 7 May 1915: Lusitania sunk
- Spring 1916: Ship tonnage sunk exceeded new ship tonnage delivered
- 31 May 1916: Battle of Jutland
- Early 1917: German U-boat campaign
- 6 April 1917: U.S.A. declares war on Germany
- June 1917: Regular transoceanic convoys begin
- 1918: North Sea Mine Barrage
- 11 Nov 1918: Armistice signed



Sinking of the Linda Blanche out of Liverpool by SM U-21
(Willy Stöwer)

Sink submarines
Build cargo ships faster than they can be sunk

Naval Vessels Delivered by Year

| Year | No. | Displacement tonnage | Average displacement | No. of battleships | No. of cruisers | No. of torpedo boats | No. of destroyers | No. of submarines | No. of other types |
|------|-----|----------------------|----------------------|----------------------|-----------------|----------------------|-------------------|-------------------|--------------------|
| 1898 | 12 | 28,111 | 2,343 | | 1 | 3 | | | 8 |
| 1899 | 8 | 24,259 | 3,032 | 2 | | | | | 6 |
| 1900 | 6 | 13,349 | 2,225 | 1 | | 3 | | 1 | 1 |
| 1901 | 8 | 24,550 | 3,069 | 2 | | 1 | | | 5 |
| 1902 | 17 | 24,560 | 1,445 | 1 | | | | | 16 |
| 1903 | 15 | 24,573 | 1,638 | 1 | 1 | | | 6 | 7 |
| 1904 | 5 | 22,362 | 4,472 | 1 | 3 | | | | 1 |
| 1905 | 9 | 72,505 | 8,056 | | 7 | | | | 2 |
| 1906 | 10 | 140,192 | 14,019 | 6 | 4 | | | | |
| 1907 | 9 | 90,743 | 10,083 | 4 | 2 | | | 3 | |
| 1908 | 9 | 85,435 | 9,493 | 3 | 5 | | | 1 | |
| 1909 | 16 | 81,135 | 5,071 | 2 | | | 4 | 6 | 4 |
| 1910 | 12 | 77,385 | 6,449 | 2 | | | 7 | 1 | 2 |
| 1911 | 12 | 61,872 | 5,156 | 2 | | | 9 | | 1 |
| 1912 | 17 | 77,598 | 4,565 | 2 | | | 6 | 7 | 2 |
| 1913 | 11 | 81,849 | 7,441 | | | | 4 | 3 | 4 |
| 1914 | 20 | 66,080 | 3,304 | 2 | | | 4 | 10 | 4 |
| 1915 | 11 | 33,765 | 3,070 | | | | 7 | 1 | 3 |
| 1916 | 22 | 160,805 | 7,309 | 4 | | | 9 | 7 | 2 |
| 1917 | 16 | 77,289 | 4,831 | 1 | | | 5 | 5 | 5 |
| 1918 | 89 | 155,642 | 1,749 | 1 | | | 44 | 36 | 8 |
| 1919 | 157 | 221,255 | 1,409 | 1 | | | 104 | 22 | 30 |
| 1920 | 94 | 171,141 | 1,821 | 1 | | | 79 | 10 | 4 |
| 1921 | 40 | 172,974 | 4,324 | 2 | | | 28 | 5 | 5 |
| 1922 | 12 | 24,286 | 2,024 | one aircraft carrier | | | 3 | 8 | 1 |

U.S.S. Wickes (DD 75)

- Laid down: 26 June 1917
- Launched: 25 June 1918
- Commissioned 31 July 1918
- Convoy escort in WWI
- 1247 tons full load
- Length: 314 ft 4.5 in
- Armament
 - 4 x 4"/50 guns
 - 2 x 1 pounder guns
 - 12 x 21 inch torpedo tubes
- Crew: 100 officers and enlisted



Shipyards that build major warships from 1913-1922

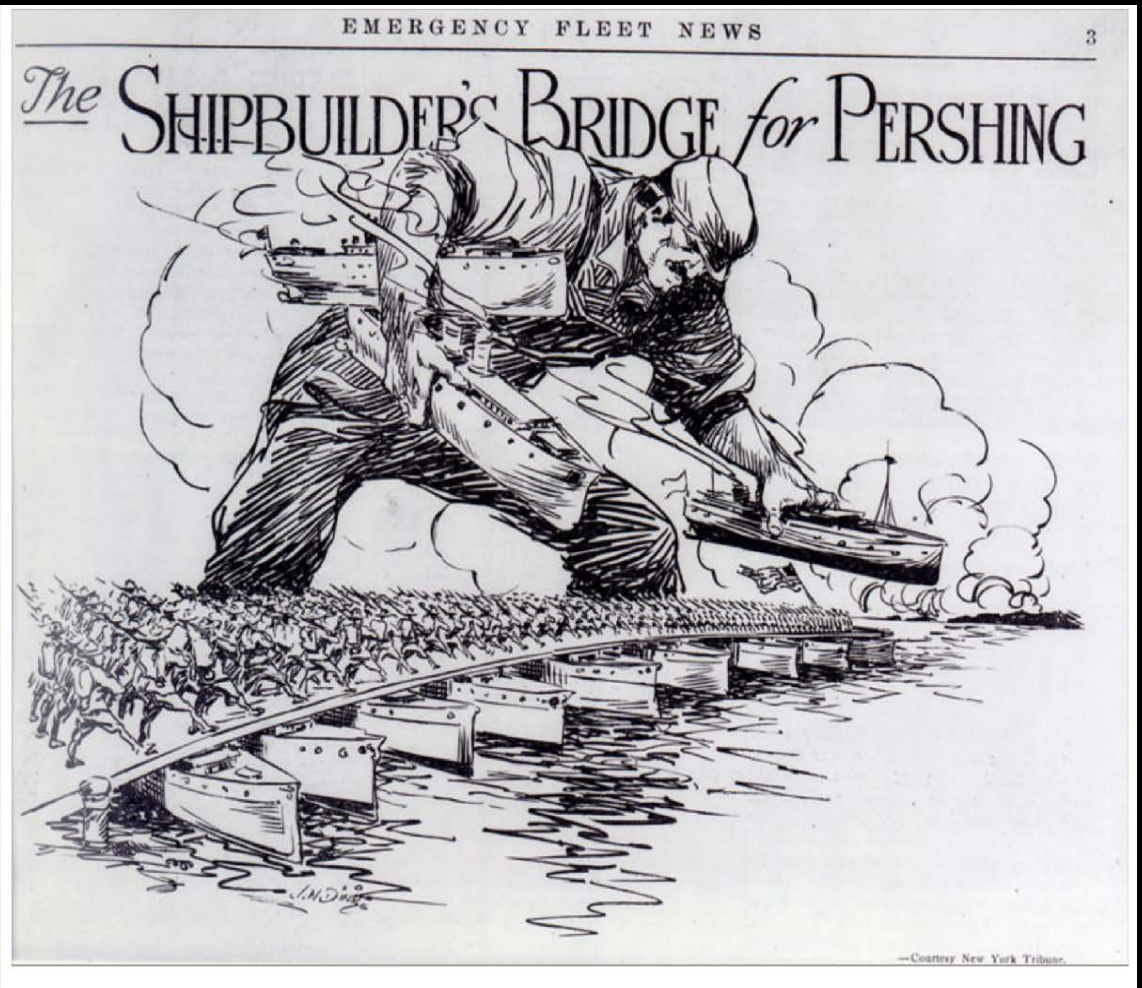
| Shipyard | Location | Major warship types built |
|---|--------------------|-------------------------------------|
| Bath Iron Works | Bath, Me. | Destroyers |
| Bethlehem Shipbuilding Corp. (Fore River) | Quincy, Mass. | Battleships, destroyers, submarines |
|  Bethlehem Shipbuilding Corp. | Squantum, Mass. | Destroyers |
| Bethlehem Shipbuilding Corp. (Union Iron Works) | San Francisco | Destroyers, submarines |
| California Shipbuilding Co. | Long Beach, Calif. | Submarines |
| Craig Shipbuilding Corp. | Long Beach, Calif. | Submarines |
| Cramp, William and Sons | Philadelphia, Pa. | Destroyers, submarines |
| Electric Boat Co. | Groton, Conn. | Submarines |
| Lake Torpedo Boat Co. | Bridgeport, Conn. | Submarines |
| The Moran Co. | Seattle, Wash. | Submarines |
| Newport News Shipbuilding and Dry Dock Co. | Newport News, Va | Battleships, destroyers |
| New York Shipbuilding Corp. | Camden, N.J. | Battleships, destroyers |
| Seattle Construction and Dry Dock Co. | Seattle, Wash. | Destroyers, submarines |
| | | |
| Charleston Navy Yard | Charleston, S.C. | Destroyers |
| Mare Island Navy Yard | Vallejo, Calif. | Battleships, destroyers |
| New York Navy Yard | Brooklyn, N.Y. | Battleships |
| Norfolk Navy Yard | Portsmouth, Va. | Aircraft carriers, destroyers |
| Portsmouth Navy Yard | Portsmouth, N.H. | Submarines |
| Puget Sound Navy Yard | Bremerton, Wash. | Submarines |

World War I propaganda featuring the United States Shipping Board (USSB) and the Emergency Fleet Corporation



THE SHIPS ARE COMING

UNITED STATES SHIPPING BOARD EMERGENCY FLEET CORPORATION

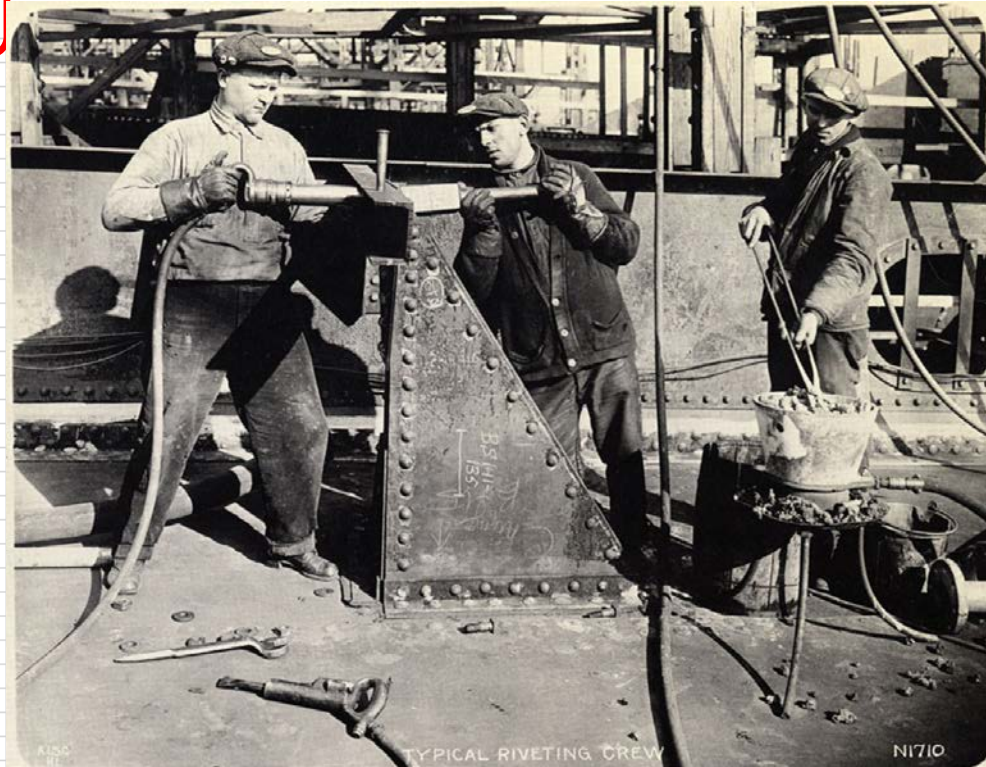


Sources: <https://docsouth.unc.edu/wwi/41892/50.html> accessed Feb. 10, 2019,
http://americanhistory.si.edu/onthewater/exhibition/6_2.html accessed Feb. 11, 2019

Merchant Shipbuilding in WWI: Emergency Fleet Corporation Yards

Riveting crew at Hog Island, 1919

| Firm | Shipyard location | No. of ships delivered to USSB | No. delivered to USSB before Nov. 1918 |
|--|-----------------------|--------------------------------|--|
| East Coast (13 yards) | | | |
| American International Shipbuilding | Hog Island, Pa. | 122 | 0 |
| Atlantic Corporation | Portsmouth, N.H. | 10 | 0 |
| Carolina Shipbuilding | Wilmington, N.C. | 8 | 0 |
| Downey Shipbuilding | Arlington, N.Y. | 10 | 0 |
| Foundation Company | Kearny/Newark, N.J. | 10 | 5 |
| Merchant Shipbuilding | Bristol, Pa. | 40 | 0 |
| Newburgh Shipyards | Newburgh, N.Y. | 12 | 0 |
| Pusey and Jones | Gloucester City, N.J. | 20 | 3 |
| Standard Shipbuilding | Shooters Island, N.Y. | 23 | 7 |
| Submarine Boat Company | Newark, N.J. | 118 | 0 |
| Terry Shipbuilding | Savannah, Ga. | 11 | 0 |
| Texas Steamship Company | Bath, Me. | 4 | 4 |
| Virginia Shipbuilding | Alexandria, Va. | 12 | 0 |
| Gulf Coast (7 yards) | | | |
| Oscar Daniels Shipbuilding Company | Tampa, Fla. | 10 | 0 |
| Doullut and Williams | New Orleans, La. | 8 | 0 |
| Foundation Company | New Orleans, La. | 5 | 0 |
| Mobile Shipbuilding | Mobile, Ala. | 14 | 1 |
| National Shipbuilding | Orange, Tex. | 12 | 1 |
| National Shipbuilding Corporation | Violt, La. | | |
| Pensacola Shipbuilding | Pensacola, Fla. | 10 | 0 |
| Midwest (2 yards) | | | |
| Globe Shipbuilding | Superior, Wis. | 19 | 4 |
| Saginaw Shipbuilding | Saginaw, Mich. | 18 | 2 |
| West Coast (10 yards) | | | |
| Ames Shipbuilding and Dry Dock Company | Seattle, Wash. | 25 | 7 |
| Columbia River Shipbuilding | Portland, Ore. | 32 | 8 |
| J.F. Duthie and Company | Seattle, Wash. | 27 | 12 |
| Hanlon Dry Dock and Shipbuilding Company | Oakland, Calif. | 11 | 4 |
| Northwest Steel | Portland, Ore. | 34 | 13 |
| Pacific Coast Shipbuilding | Bay Point, Calif. | 10 | 0 |
| Seattle North Pacific Shipbuilding | Seattle, Wash. | 10 | 0 |
| Skinner and Eddy | Seattle, Wash. | 40 | 25 |
| Supple-Bollin Shipbuilding | Portland, Ore. | 12 | 8 |
| Union Construction Company | Oakland, Calif. | 10 | 0 |
| | Sum: | 707 | 104 |

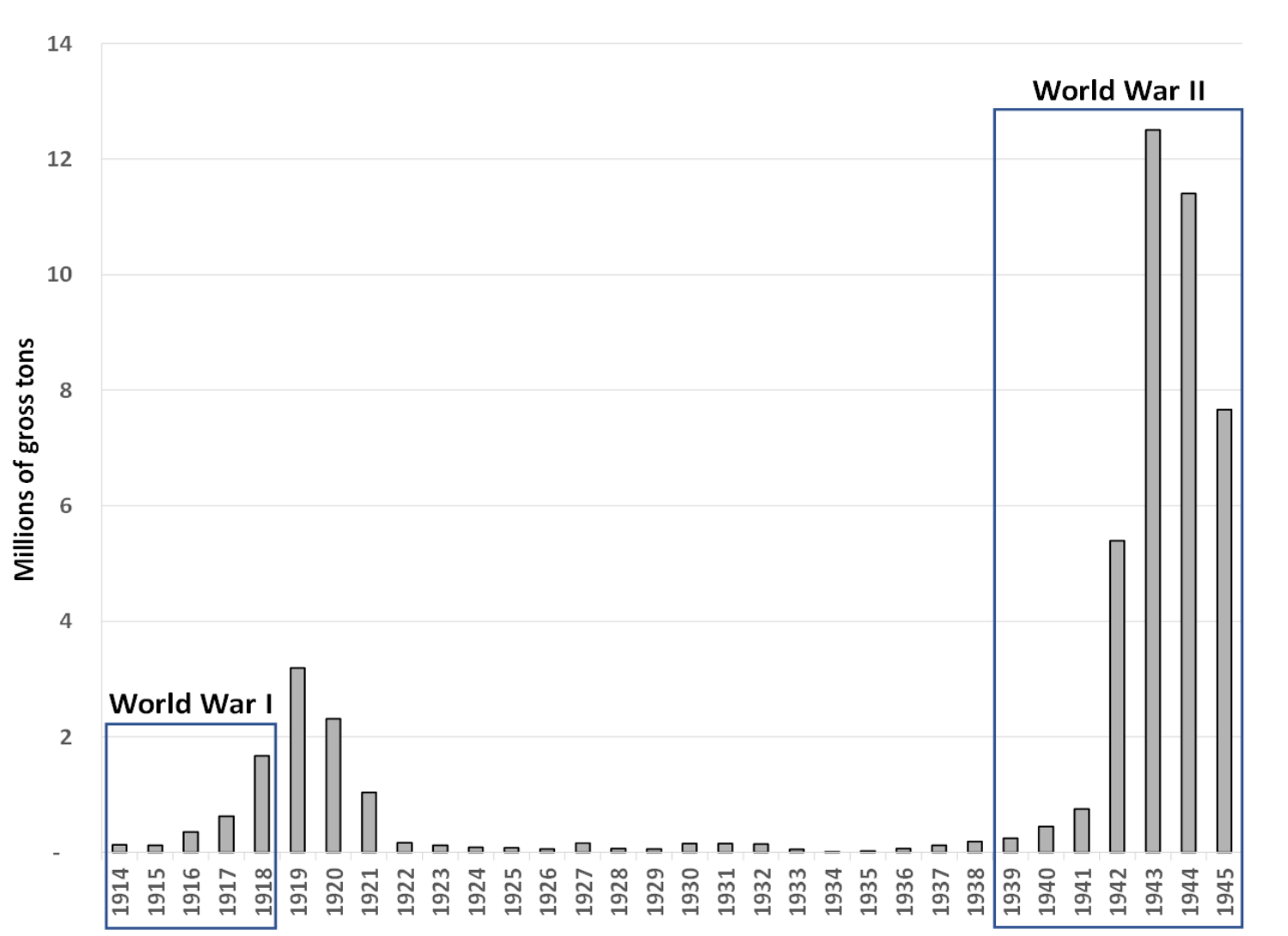


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Most ships delivered after the Armistice

Gross tons of steel merchant ships (over 2,000 gt) delivered, 1914-1945; time-slots of World War I and World War II involvement are indicated.

(Data: Smith and Brown, 1948, Table 9)

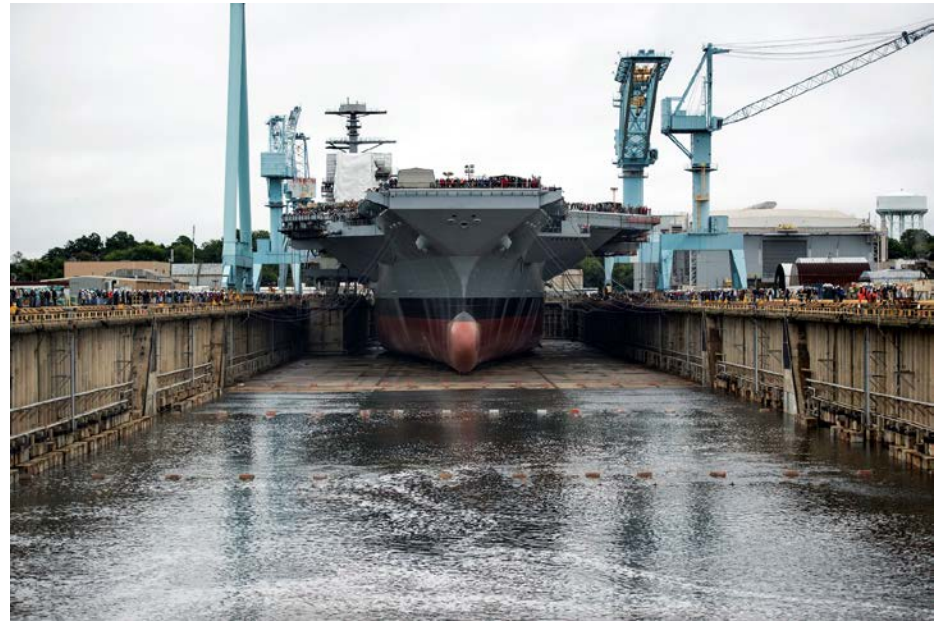


Observations

- Shipbuilding program was not effective because it started too late.
 - Started with Shipping Act of 1916 and Naval Act of 1916
 - Peak production was in 1919
 - Lasted through 1922
- The industrial expansion effort was impressive and served as a “trial run” for World War II.
- The types of ships needed in quantity during the war differed from the types built prior to the war.
 - Pre-war: Battleships and cruisers
 - During the war: Destroyers and submarines

Recommendations

- Invest in options to increase industrial capacity rapidly.
- Reexamine merchant marine and merchant shipbuilding policies.
- Create (and prototype) high-volume producible detail designs of merchant ships and naval ships.
- Invest in ship design flexibility.



U.S. Navy Photo 131011-N-KK576-015:
Mass Communication Specialist 1st Class Joshua J. Wahl