

Shipbuilding and the Waterfront Plan of 1912

A presentation to the Changing Urban
Waterfronts Seminar Series

Michael Moir, York University Libraries
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Objectives of presentation

- Outline the 18th and 19th-century foundations for local shipbuilding
 - Explore the opportunities for growth within the context of the Toronto Harbour Commission's Waterfront Plan of 1912
 - Identify the impact of national and international forces on the Plan's sustainability
 - Comment on gaps in the sources and potential for further research
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Early beginnings of an industry: War, mills, and manufacturing



C.H.J. Snider's depiction of the armed yacht *Toronto*, built on the Humber River in 1799

- Construction of large vessels in Toronto began in defence of the military garrison. The armed yacht *Toronto* was built on the Humber River in 1799, and the keel of 30-gun frigate *Sir Isaac Brock* was laid in spring of 1813 just west of Bay Street, at site of Union Station. It was torched by the British in April 1813 to keep it out of the hands of the invading Americans.
- Private vessels were built as early as 1799, when Joseph Dennis launched the yacht *Captain Baker* on Humber River. According to a map of the waterfront drawn in 1813, "Merchants shipyard" was located east of the settlement on the Don River and north of its mouth, but little else is known about it. Schooners, towboats, yachts and ferries were built for the lake trade on the central waterfront at places such as Tinning's Wharf near the foot of York Street; most of these vessels were less than 300 tons. The notable exception was the 1,000-ton *City of Toronto*, built by the Hayes Brothers near their furniture-making building on Front Street. Named after its place of construction at the request of City Council, this square rigger was launched on 3 April 1855 and plied the timber trade from Quebec City to Liverpool.
- The steam dredge *Nipissing* was constructed near the mouth of the Don in 1873 to deal with silt from the river.

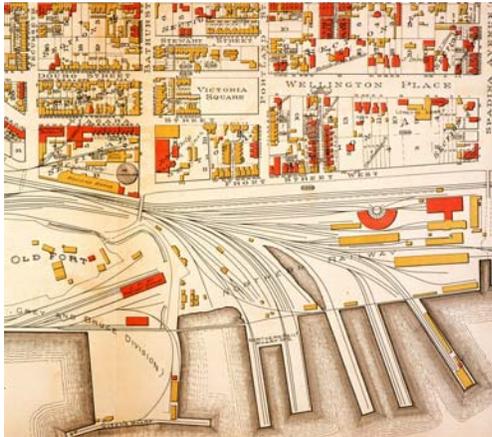
Disappointment at the mouth of the Don: Alexander Coghill's dry dock, 1880-1893



The ruins of the dry dock, 30 September 1898

- Scottish shipwright Alexander Coghill leased site from City in Aug 1882 for \$8 per year for 21 years with an exemption from property taxes. The proposed capital of his company was \$30-\$50,000 to construct a dry dock and carry on operations.
- *Globe*, 12 Aug 1880: "For many years it has been a source of just complaint among vessel owners calling at this port that, though compelled to come here for cargoes, they could not get repairs done here to their ships. Through the want of a dry dock the city has lost a very valuable industry of which she might just have had benefit ... and vessels continued to go to Port Dalhousie or to Ogdensburg, or some other American port, when repairs became necessary. ... The importance of the scheme to Toronto can hardly be over-estimated. To say nothing of the direct benefit (the greatest one, of course) of the money it will spread among our own citizens, which hitherto has gone to enrich other places, there are many indirect benefits of no insignificant nature. Many vessels must pass Toronto simply because, through having suffered some damage while on the lake, their captains know that there is no use in making for Toronto. These will now in many cases be directed to this port. A portion of the marsh, which has so long been an object of discussion, will be reclaimed, and made valuable. This, it is to be hoped, will be the precursor of a large number of industries to be established upon this spot."
- Several years of high water prevented completion of the dry dock, which, in the words of a city official, "was a failure from the beginning, and was very little used." Burnt by fire to the waterline, its ruins lay at the foot of Cherry Street, but it set the theme for subsequent development:
 - Importance of ship repair to viability of the port and shipbuilding
 - Conversion of marshlands to industrial use
 - Role of government or its agents in providing cheap land

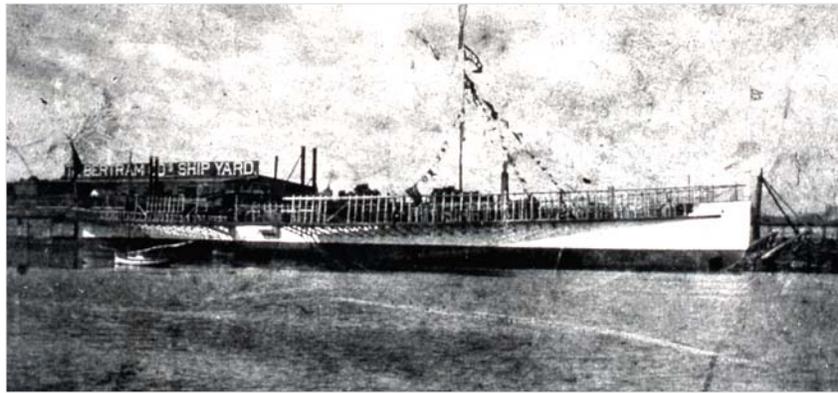
John Doty Engine Works



This plan from 1890 shows Doty's machine works at the lower-right corner of Bathurst and Niagara streets, as well as the wharf of the Northern Railway south of Portland Street that Doty used to build ships by 1892

- Shipbuilding had shifted away from Bay and York streets to eastern and western flanks of the city's waterfront, with shipyards giving way to passenger terminals and freight sheds.
- Ships had been built near the foot of Bathurst Street in the city's west end since at least 1865, as seen in William Armstrong's painting of this area of the waterfront.
- John Doty moved from Vermont to Oakville, Ontario, where he started an engine works in 1871. He relocated his business to Toronto's Yonge Street Wharf in 1875 where he specialized in building boilers and upright engines, including machinery for yachts and other types of vessels. The machine works was shifted to the south-east corner of Bathurst and Niagara streets by 1890, and within two years he occupied the Northern Railway's wharf south of Portland Street to build ships despite the wide expanse of railway tracks that separated the yard from Doty's shops. The company produced passenger vessels such as the *Garden City* – built in 1892 to run between Toronto and St. Catharines – which fit well with Doty's other business as a licensed ferry operator on Toronto Harbour. Bertram & Co. purchased "the entire property and good-will" of Doty's company, and it announced in the *Globe* on 15 Sep 1892 that it would carry on business under the name of the "Doty Engine Works Co., as manufacturers of engines, boilers and machinery, giving special attention to marine work & shipbuilding. The works are thoroughly equipped for turning out first-class machinery with despatch at the lowest possible prices, and no effort will be spared to give the utmost satisfaction all who will entrust the new firm with contracts."

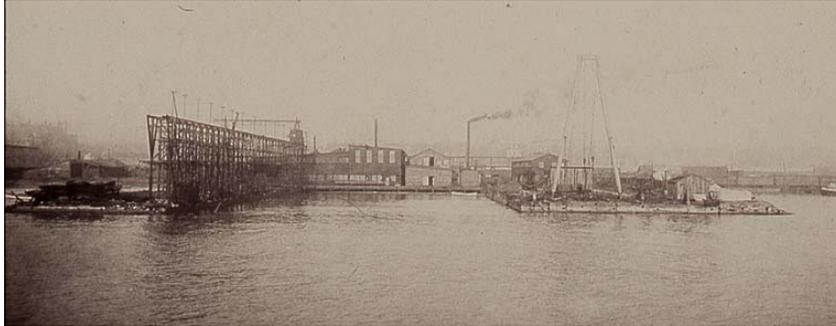
Bertram Engine Works



The steamer *Toronto* after its launch on 21 June 1898

- George and John Bertram announced the change of their firm to the Bertram Engine Works Co. on 1 Nov 1893, as well as the appointment of Arendt Angstrom, formerly Chief Engineer of the Cleveland Ship Building Co., as Manager of the Works.
- The company was best known for the vessels designed by Angstrom for the Richelieu and Ontario Navigation Co. including the steamer *Toronto*. It built prefabricated ships such as the sternwheeler *Moyie* transported to Nelson, BC by rail and operated by the Canadian Pacific Railway. When the passenger vessel *Montreal* was launched on 3 Feb 1902, the *Globe* reported that Bertram was the best and cheapest shipbuilder, but Canadians cannot compete against British firms due to an advantage created by federal duties.
- John carried on the business after the death of George in 1900, and by 7 Apr 1902 was looking for a new site to build hulls too large for Toronto harbour despite competition from British yards.
- Well known for its success as a shipyard, the company struggled to attract orders for engine-building that kept men employed between contracts.
- Globe* reported on 14 Mar 1903 that Toronto yards were expanding and had enough contracts to stay busy for years, and on 16 Nov 1903 that shipbuilders were not able to get enough skilled men and labourers to sustain operations at the required level.
- Jun 1905, yard and plant bought by the Canadian Shipbuilding Co.

Canadian Shipbuilding Company



Looking north from the Inner Harbour at the yard of the Canadian Shipbuilding Company near the foot of Portland Street, 21 November 1912

- Established by Frederic Nicholls with a capital of \$1,000,000 in Nov 1902, the Canadian Shipbuilding Co. was intended to build and navigate vessels, general forwarding business, and wrecking.
- After nine years with the Bertram Engine Works, Angstrom joined the new company in Feb 1903 as it looked for land for its yard; he was replaced by J. Gerrell, who was managing a shipyard in Sweden and had also worked in Europe (one of many connections between Toronto's shipbuilding industry and Scandanavian countries).
- Death of John Bertram in 1904 led to the acquisition of the Portland Street yard by Canadian Shipbuilding, which was also operating a yard at Bridgeburg on the Niagara River to build vessels larger than canal size for the upper lakes. The Portland yard was to be used for canal-size freighters and excursion steamers.
- On 25 Oct 1907, *Globe* reported that the yard will be practically closed upon completion of existing contracts due to demand for higher wages and tightness of capital market; new contracts were being refused by the company. 5 Aug 1908, *Globe* reported that the company has decided to focus its energies and resources on the Bridgeburg yard, and it put the Toronto up for sale.

Polson Iron Works, 1883

8 THE GLOBE, TORONTO, SATURDAY, DECEMBER 21, 1883

WM. POLSON & CO.,
Engineers, Machinists, and Machinery Brokers,
81 Esplanade-street East, Toronto, Ont.,
MANUFACTURERS OF

ENGINES and BOILERS, Boiler Makers' Power Punch and Shear,
 Portable, Upright, Shafting, Hangers, Pulleys, and
 and Stationary. General Machinery.

STEAM YACHT MACHINERY A SPECIALTY.
DEALERS IN NEW AND SECOND-HAND

Iron Tools, Machin Shop Supplies, Fan and Blowers, Portable Forges.
Wood Working Machinery, Saw Mill Machinery, Skingle and Lath Mill Machinery, Belling.
Steam Pumps, Centrifugal Pumps, Spring Hammers, Brass Goods.

AGENTS FOR
STOW FLEXIBLE SHAFT, JUDSON GOVERNORS, HOLLAND LUBRICATORS,
MURDOCK INJECTOR, STURTEVANT'S FANS AND BLOWERS, TURNER'S PATENT HEATER.

We keep a Good Stock of New and Second-hand Engines, Boilers and all the above-mentioned machinery. All machinery manufactured or handled by us is put in perfect order, and tested before leaving our Works. Satisfaction guaranteed. Write or call and get our prices before purchasing elsewhere.

WILLIAM POLSON & CO.
NOTE—SPECIAL ATTENTION GIVEN TO STEAMBOAT WORK.

- William Polson and his son, Franklin Bates Polson, left jobs with railway companies to form their own company offering a range of manufacturing and sales that offered economic security through diversity. They established a shipyard in Owen Sound in 1888 in response to incentives from the municipality; launched the *Manitoba* in 1889 for service in the CPR's Port Arthur Line, reported to be the first steel steamship in Canada.
- Frank and James Polson establish Polson Iron Works in 1893, and initiate the company's foray into shipbuilding in Toronto. They employed 500 people by 1907, who built steam launches, dredges, car ferries, a prefabricated steamboat hull for the Klondike, side-wheel ferries such as the *Trillium*, lighters for the Hudson's Bay Company, light-ships for the federal government, and the armed fisheries protection cruiser *Vigilant*, the first home-built, steam-powered warship.
- Silt from the Don River made it impossible to move vessels in and out of Polson's slip without regular dredging at considerable expense; the challenge of maintaining a navigable waterway along the north shore of Toronto Harbour was a significant problem facing commercial property owners dependent upon access for ships.

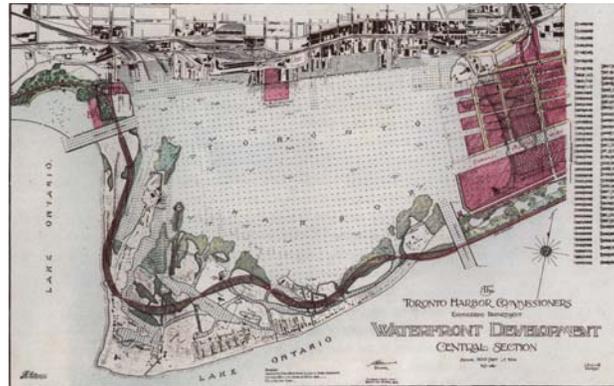
Pressure to expand despite challenges facing industry, but no room to grow once Polson built to the Windmill Line



View of the central waterfront east of Yonge Street with Ashbridge's Bay in the background, 1915; the cramped yard of the Polson Iron Works is in the centre-right of the image

- 1907 – FB Polson died, and was succeeded by John Bellamy Miller, who first invested in the company in 1887.
- 1909 – Miller pressured City to allow expansion east of Sherbourne St; street closed and adjacent municipal yard was leased giving the company 12 acres, but it pursued a lease from the City for 50 acres of land at east end of the bay near Keating's Cut for a new shipyard and floating dry dock.
- Polson was lone surviving shipyard in Toronto; literature produced by shipbuilding industry reveals that challenges shared by yards across the country. Shipbuilders complained of no protection for yards compared to support given to railways by the federal government through grants, guarantees of credit, and tariffs that promoted east-west trade and subsidiary industries such as rolling mills and locomotive works. Short navigation seasons and improvements in hull design encouraged owners to drive their vessels harder, resulting in repairs that were more extensive and expensive. Ships were not insured for time lost, so repairs also had to be expedited to satisfy the requirements of Canadian operators. Shipyards needed good dry docks, boiler shops, foundries, cranes and associated plant, a supply of steel worth between \$50,000 to \$100,000, and between 300 and 1,000 highly specialized tradesmen to attract repair business to sustain yards between contracts.
- Shipbuilding was highly vulnerable to competition from protected yards in the United States, and from firms in the United Kingdom that paid workers close to 70 percent less than Canadian. UK firms could use prefabrication to bring large vessels through locks on the St. Lawrence River. Proposals for tariffs, bounties, subsidies and a merchant marine fell on the deaf ears of federal officials.

The Waterfront Plan of 1912 – industrial development to pay for a program of mixed land use and transportation corridors



- Toronto Board of Trade led a campaign based upon a planning tradition dating to the 1880s to reorganize the current port authority into an agency with the mandate to deal with the port's many problems; see the work of Gene Desfor in particular for background on this initiative in waterfront governance.
- Toronto Harbour Commissioners (THC) was established by a federal act of parliament on 19 May 1911, and given extraordinary powers in the area of land development and management. It spent the next 18 months preparing a comprehensive scheme of development, the Waterfront Plan of 1912, that featured:
 - Commercial development along dock walls in the central waterfront and Ashbridge's Bay;
 - Recreational areas in each section of the waterfront; and
 - Industrial development at the foot of Bathurst Street and on an industrial district to be reclaimed from Ashbridge's Bay using 27 million cubic yards of dredged fill (pink areas on map).
- Implementation of the plan was estimated to cost \$19,000,000, which was raised by sale of bonds worth \$25,000,000. Bonds would be redeemed by revenue from rental of property for industrial and commercial purposes. While the plan was not specific about the types of industries to be developed, Robert Gourlay, a harbour commissioner speaking to the 6th National Conference on City Planning in 1914, stressed that provision would be made for "the construction and repair of water-borne craft; industries of this nature ... should be indigenous to the development of a water-front property."

World war leads to a crisis in capital, soon followed by a rash of orders for ocean-going cargo and naval vessels



Launch of the *War Algoma* at the Polson Iron Works, 24 June 1919, by Frederic Waistell Jopling

- By Jan 1914 it was clear that Polson would be landlocked by reclamation. It had contracts worth more than \$400,000 from the federal government and the Quebec Harbour Commission for six dump scows and a buoy tender, and needed 200 more workers in addition to the 450 already on the payroll. Negotiations began with THC for a 28-acre site in new Port Lands; a 42-year lease was ready by July 1914. Outbreak of war in Aug 1914 made it difficult to finance the venture, and the lease was put aside until situation in Europe was clearer.
- British shipbuilders stopped construction of merchant vessels in late 1914 after yards were commandeered for naval vessels. Within the year, however, Britain was desperate for freighters to replace vessels sunk by German submarines. It lacked labour and material to restore the merchant marine while maintaining its navy, and so turned to Canada through the Imperial Munitions Board (IMB), the Canadian arm of the British Ministry of Munitions.
- Polson initially occupied with manufacture of shells and shrapnel, but by 1917 it receives contracts from the Imperial Munitions Board to build six steel cargo ships, as well as trawlers and fishery cruisers.
- Delays in dock wall construction forced Polson to remain at its original Frederick Street site despite increase in workforce to 1,700 people in 1918.
- 3 Aug 1917, *Globe* – “If the local shipbuilders had ten times as much space at their disposal they could use it to good advantage with the orders they have on hand.”

Toronto Shipbuilding Company on the Keating Channel



Launch of the *War Ontario*, 19 June 1918

- John E. Russell took over the Portland Street shipyard while working on construction of the Western Breakwater, and started the Thor Iron Works. He won contracts to build steam trawlers for the Royal Navy, and two freighters for Norwegian interests.
- Entry of the United States into the war worsened the chronic shortage of steel, which led the IMB to commission wooden-hulled vessels on the west coast as well as from several builders along the St. Lawrence River and Great Lakes.
- Russell established the Toronto Shipbuilding Company along the Keating Channel in Sep 1917 to build two 3,200-ton wooden cargo freighters, initially employing 400 men including carpenters brought over from Scotland. Work was delayed due to difficulties finding trained labourers and sufficient supplies of Douglas fir (THC was using the same wood for cribbing for its dock walls).
- The first vessel, the *War Ontario*, slid down the ways on 19 Jun 1918 with some excitement. The shape of a cross on the bow is a ship's caulker who fell overboard during the launch, and had to be pulled from the Keating Channel.

Toronto Shipbuilding Company on the Keating Channel



View looking east along the Keating Channel, 19 October 1918. The *War Ontario* is being fitted out, and work continues on the *War Toronto* before its launch seven days later

- *Globe*, 6 Feb 1919 – Russell's company employed 500 to 600 carpenters and unskilled labourers through the winter of 1917-1918 and up to the armistice in Nov 1918, paying out salaries of \$500,000 during the last year of the war.
- The Keating Channel would become home to Russell's floating dry dock, which was used to repair vessels for at least the next 15 years.

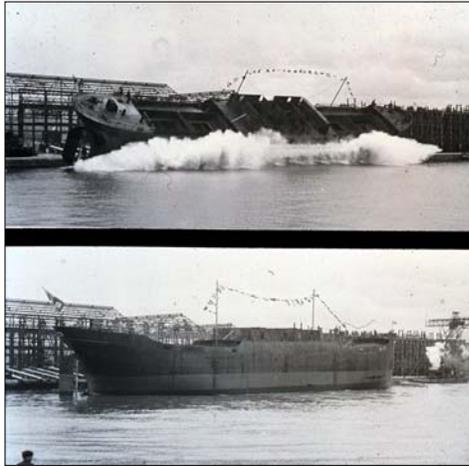
Norwegian and American capital looks to Bathurst Street industrial reserve to meet demand for ocean-going cargo vessels



Looking northeast from the harbourhead wall at the foot of Bathurst Street toward the Thor Iron Works, 1917; this site will soon be reclaimed for the Dominion Shipbuilding Company

- Christoffer Hannevig was a Norwegian financier who moved to New York in 1915 to procure ships for Norwegian interests. He placed orders for several vessels to be built in Canada during 1916, and it is possible that he met Louis Dahlgren, President of Thor Iron Works, when Dahlgren visited New York to drum up new business.
- Shortly after Dahlgren's visit, Thor Iron Works lobbied the federal Department of Marine and Fisheries for approval to export Canadian-built ships to neutral countries such as Norway, a campaign that was joined by several other Canadian builders including the Polson Iron Works in Oct 1916. These requests were opposed by the British Admiralty; unable to requisition vessels built for neutrals, the Admiralty convinced the Colonial Office to pressure the Canadian government to build the vessels in its own right. Not impressed by the British decision to order ships and submarines from American yards despite Canadian overtures for this work, the cabinet issued orders-in-council in Nov 1916 permitting Thor, Polson, and a few other Canadian builders to export a limited number of hulls for Norwegian registry.
- John Russell sold the Thor Iron Works to Hannevig in Nov 1917. Working with capital invested by J.P. Morgan & Co. of New York, Hannevig formed the Dominion Shipbuilding Co. and looked to the industrial reserve at the foot of Bathurst St. for its yard – a 15-acre site that was still two-thirds underwater.

Dominion Shipbuilding Company



Launch of the freighter
St. Mihiel, 26 September
1918

- Dominion Shipbuilding signed a lease with the THC in late Nov 1917, and the agency undertook to complete reclamation of its site as soon as possible. It also agreed to lay the foundations for the yard's plant, and assemble the buildings of what was reputed to be one of the largest shipyards on the continent. Harsh winter weather and the destruction of the Thor Iron Works' shipyard by fire in April 1918 delayed completion of the project by four months.
- Work on first hull was underway by May 1918, and four additional hulls for 3,500-ton steel freighters were soon added along the dock wall. It was anticipated that 1,500 men would be working in the yard by the end of summer. Dominion Shipbuilding's first vessel, the *St. Mihiel*, was launched on 26 Sep 1918.

Industrial infrastructure offers capacity to employ returning veterans, but federal priorities thwart local plans

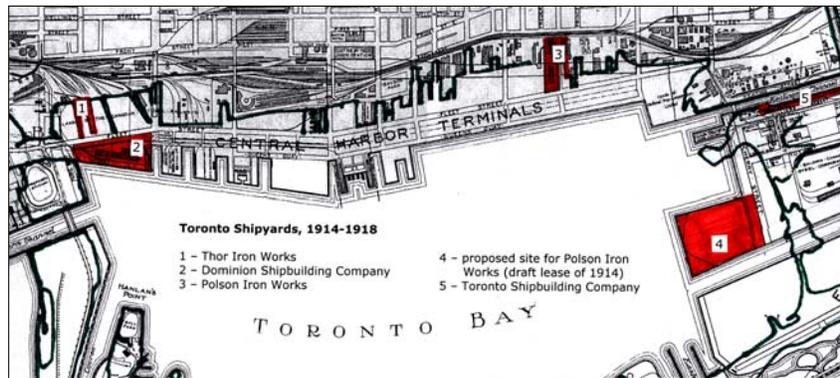


Yard of the Dominion Shipbuilding Company with the *St. Mihiel* moored at the dock wall, 7 October 1918

•25 Nov 1918, the *Globe* commented that, "Shipbuilding is one of the fields of industry that can be depended upon to absorb a considerable portion of the labor that is being released from strictly war business. While the shipbuilding industry received its impetus as a result of conditions brought about by the war, prominent Canadian shipbuilders foresee great activities for at least six or eight years, and they are confident that the industry will retain permanently a large place in Canada."

•Foreseeing a shortage of work after the war, Polson sold 10 vessels to Norwegian interests in 1917 for delivery from 1919 to 1921. JB Miller was initially told that the federal cabinet agreed would permit Polson to export this work, which led him to close the contract in New York for \$6,500,000. When Miller asked for a copy of Order-in-Council, he was told that it had not been signed because the government decided to build a fleet of vessels for the Canadian Government Merchant Marine that would keep all the Canadian yards busy. The federal government refused to grant export licenses to ensure an adequate supply of steel plate and affordable labour for its own ships in view of the competitive pressures exerted by Norwegians and the French government that offered more per deadweight ton than Canada. Polson's contract was cancelled and the deposit returned, depriving the company of work that would have paid \$1,500,000 per year in wages until 1921 during a time of high unemployment in Toronto.

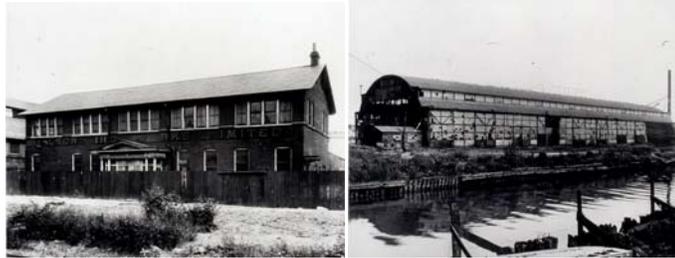
International demand for merchant ships was a catalyst for waterfront development during World War I ...



The 1912 shoreline outlined on the THC's progress plan of 1920 shows the extent of reclamation; existing and proposed shipyards are shaded red

- By Nov 1918, war-related industries (shipbuilding and the steel plant of British Forgings Ltd., another IMB initiative) occupied 90 percent of the land reclaimed by the THC from Toronto and Ashbridge's bays. It was hope of City Council, the THC, and newspaper commentators that the demands of post-war reconstruction would bring new uses for these industries that would buffer rising unemployment in Toronto.
- Polson's berths were full with freighters for the IMB and Hannevig (whose order was covered by the 1916 export license), and the company was unable to tender for the shipbuilding program commissioned to create the Canadian Government Merchant Marine. Dominion Shipbuilding, on the other hand, was ineligible to tender because it was not an established shipyard when the program was announced.
- Renewed requests by both companies to build for neutral countries were turned down by the federal government. It finally acquiesced in Dec 1918 and allowed Canadian shipbuilders to pursue foreign orders. Peace, however, eradicated the demand for new merchant vessels, and the opportunity to tie up Norwegian and French orders with binding contracts had passed. The federal policy opposing export licenses had eliminated the most promising prospect to sustain Toronto's shipyards during the difficult years that followed the war. Loss of this industry, as well as the THC's inability to find a new operator for the British Forgings steel mill in the Port Industrial District, would seriously undermine the ability of the THC to generate a sustainable revenue stream to meet the demands of its bond issue.

... but by 1920 the remnants of bankrupt shipyards were left abandoned



Derelict buildings of the Polson Iron Works, 30 July 1926

- Feb 1919, Tommy Church, Mayor and harbour commissioner, was finally able to convince the Minister of Finance (Toronto MP Sir Thomas White) to fund contracts for two vessels to be built by Dominion Shipbuilding during a supplementary construction program for the merchant marine.
- Globe*, 6 Feb 1919 – workforce of Toronto Shipbuilding was reduced to about 40 with the intention of dismantling and selling the outfit in May due to lack of contracts. JE Russell pointed out that government contracts for two wooden ships would employ 400-600 mechanics for 10 months, but Charles Bannatyne, Minister of Marine & Fisheries, opposed the construction of wooden ships despite the fact that 10 such vessels were under construction in Montreal and eight in Quebec for French interests, several more in Trois Rivieres for American interests and a large number were being built in New Brunswick and Nova Scotia.
- Polson Iron Works declared bankruptcy in Mar 1919. Its last vessel, the freighter *War Halton*, was completed in receivership. The Frederick Street yard and plant were sold in Apr 1920.
- 3 Sep 1920, the *Globe* reported the failure of the Dominion Shipbuilding Co. due to insufficient capital and rising labour costs, as well as failure to collect its debts especially from Christoffer Hannevig, who owed \$500,000 (Hannevig Bros. had advanced the company \$4,000,000, and had bought ships on the money the company owed them). The last two freighters, meant to save the company's fortunes, were finished using labour from the Collingwood shipyard.
- These bankruptcies brought an abrupt halt to an industry employing between 2,500 and 4,000 people receiving annual wages in excess of \$2,350,000 by the close of World War I.

Conclusions

- ❑ Shipbuilding was cyclical in nature, ranging from periods of high demand and large employment to dormancy within a few months.
 - ❑ Shipbuilders depended upon the production of engines and boilers as well as metal millwork and stamping to hold onto skilled workers between contracts. This work required a significant outlay of capital in plant and machinery, but it ensured that the city's expanding industrial sector would have a dependable supply of machinery to support its operations.
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Conclusions

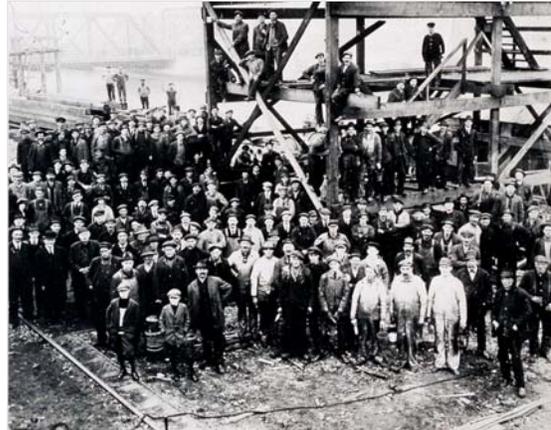
- Despite the challenges of cheaper foreign competitors and no protective tariffs, shipbuilding was attractive to capitalists, politicians and urban planners due to its economic spin-offs, and the prospect for a recovery of the investment in waterfront development.
 - Toronto Council encouraged this industry with low rents and tax exemptions since the 1880s as a means to develop the 'valueless' marsh in Ashbridge's Bay. This objective was carried forward by the Toronto Harbour Commission, which employed engineering expertise and its powers as a property developer to encourage shipbuilding in the two industrial reserves set out in Waterfront Plan of 1912.
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Conclusions

- Success was influenced by regional, national and international demand for commercial cargo tonnage, labour's wage expectations, Canadian tariffs that favoured railways but not shipbuilding, and federal policies regarding sales to neutral countries and awards of contracts
 - After a period of rapid growth between 1914 and 1918, these pressures combined to decimate the local industry by 1920, and to undermine the sustainability of the Waterfront Plan of 1912 in terms of industrial land use and efforts to meet the demands of a \$25 million bond issue (estimated to be equivalent to \$459 million in 2008).
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We know some of the faces, but very few of the names – records are in short supply to study Toronto's shipbuilding industry

Workers at the yard of the Toronto Shipbuilding Co., Keating Channel, 1918



- No corporate records have been found for any of the firms that operated shipyards in Toronto, making it impossible to determine revenue generated by shipbuilding compared with the manufacture of boilers and/or engines or other equipment, fluctuations in orders and employment, names and locations of clients, composition of workforce, distribution of economic benefits to other commercial and industrial concerns in Toronto, southern Ontario, or elsewhere
- Story told that Arendt Angstrom tossed the engineering drawings for his passenger vessels into the furnace of Canadian Shipbuilding Company upon closure of the Portland Street yard
- Drawings for ships of the Thor Iron Works were lost in the fire that destroyed its shipyard in April 1918
- The sale of Polson Iron Works' yard and plant in 1920 possibly included its drawings; some sold at auction in the early 1980s were purchased by Maurice Smith, Executive Director of the Marine Museum of the Great Lakes at Kingston
- Majority of research is based on records at Library and Archives Canada (Department of Marine and Fisheries, Imperial Munitions Board, papers of Sir Joseph Flavelle), records of the Toronto Harbour Commissioners (now the Toronto Port Authority), and newspaper articles

Illustration credits

Slide 3 – Toronto Reference Library, T15210, published in Ted Wickson, *Reflections of Toronto Harbour: 200 years of Port Activity and Waterfront Development* (Toronto, 2002), p. 18

Slide 4 – City of Toronto Archives, Fonds 200, Series 376, Item 2

Slide 5 – CTA, Goad's Atlas, 1890, plate 19

Slide 6 – Toronto Port Authority Archives, PC15/3/752

Slide 7 – TPAA, PC2/154

Illustration credits

Slide 8 – Advertisement in the *Globe*, 22 December 1883

Slide 9 – TPAA, PC 1/1/805-806

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Slide 11 – Collection of the City of Toronto, Economic
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Slide 21 – TPAA, PC15/3/706

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