Cradle of Modernity:
The World Economy from 1870 to 1914

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World circa 1870

- Revolution in communication.
- Revolution in transportation.
- Revolution in finance.
- Revolution in management and invention.
- Revolution in countries relative standing in the world.
- Revolution in politics: democracy and populism.
Revolution in Communication

- *Great Eastern* lies down a telegraphic cable between Yemen and Bombay.

- Faster communications:
  1. Governments.
  2. Companies.
  3. Families.
Revolution in Transportation

- R.M.S. Oceanic ⇒ White Star Line’s first liner:
  1. Iron-hulled.
  2. Steam-powered.

- Facilitates migration: one hundred million migrants between 1870-1925 ≈ 10% of the world’s population in 1870.

- Starting in 1850, perishable organics start to be traded overseas.

- By 1900s, Europe’s beef is raised in Argentina, its mutton and wool in Australia, and its butter in New Zealand.

- Consequences:
  1. World convergence of prices.
  2. Agrarian crisis in Western Europe.
FIGURE 1
Distribution of Counties Existing in 1840 and with Unchanged Boundaries as of 1860, Showing the Change in the Percentage of Farm Land that Was Improved Between 1850 and 1860.
FIGURE 2
Midwestern Railroads Built Between 1850 and 1859 (highlighted in red)
Relative to the Panel of Counties with Stable Boundaries
Figure 1
Gross Intercontinental Emigration from Europe, 1846-1939
(annual averages)
### Table 3
Gross Emigration Rates from European Countries, 1850-1913
(Emigrants per 1000 population per annum, decade averages)

<table>
<thead>
<tr>
<th></th>
<th>1850-59</th>
<th>1860-69</th>
<th>1870-79</th>
<th>1880-89</th>
<th>1890-99</th>
<th>1900-13</th>
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<tbody>
<tr>
<td>Belgium</td>
<td>1.90</td>
<td>2.22</td>
<td>2.03</td>
<td>2.18</td>
<td>1.96</td>
<td>2.32</td>
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<tr>
<td>Denmark</td>
<td>--</td>
<td>--</td>
<td>1.97</td>
<td>3.74</td>
<td>2.60</td>
<td>2.80</td>
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<tr>
<td>France</td>
<td>--</td>
<td>0.12</td>
<td>0.16</td>
<td>0.29</td>
<td>0.18</td>
<td>0.15</td>
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<tr>
<td>Germany</td>
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<td>1.61</td>
<td>1.35</td>
<td>2.91</td>
<td>1.18</td>
<td>0.43</td>
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<tr>
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<td>2.47</td>
<td>3.87</td>
<td>5.71</td>
<td>3.92</td>
<td>7.08</td>
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<tr>
<td>Ireland</td>
<td>18.99</td>
<td>15.16</td>
<td>11.28</td>
<td>16.04</td>
<td>9.70</td>
<td>7.93</td>
</tr>
<tr>
<td>Italy</td>
<td>--</td>
<td>--</td>
<td>4.29</td>
<td>6.09</td>
<td>8.65</td>
<td>17.97</td>
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<tr>
<td>Netherlands</td>
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<td>1.67</td>
<td>2.66</td>
<td>4.06</td>
<td>4.62</td>
<td>5.36</td>
</tr>
<tr>
<td>Norway</td>
<td>--</td>
<td>--</td>
<td>4.33</td>
<td>10.16</td>
<td>4.56</td>
<td>7.15</td>
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<tr>
<td>Portugal</td>
<td>--</td>
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<td>2.91</td>
<td>3.79</td>
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<td>5.67</td>
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<tr>
<td>Spain</td>
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<td>--</td>
<td>3.91</td>
<td>4.63</td>
<td>6.70</td>
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<tr>
<td>Sweden</td>
<td>0.51</td>
<td>2.52</td>
<td>2.96</td>
<td>8.25</td>
<td>5.32</td>
<td>2.93</td>
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</table>


*Notes*: These figures are for gross emigration, drawn largely from Ferenczi and Willcox (1929).

Where possible the figures include emigration to other countries within Europe. Unfortunately, data on return migration are limited.
Figure 1: Global Freights and UK Trade

Global Freight Index, Isserlis (1938) vs. Volume of U.K. Trade
Figure 9.1: The Price of Wheat in London, New York, and Chicago 1800-1980
<table>
<thead>
<tr>
<th>Commodity</th>
<th>Markets</th>
<th>1870</th>
<th>1895</th>
<th>1913</th>
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<tr>
<td>Wheat</td>
<td>Liverpool/Chicago</td>
<td>0.576</td>
<td>0.178</td>
<td>0.156</td>
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<td>Meat</td>
<td>London/Cincinnati</td>
<td>0.925</td>
<td>0.923</td>
<td>0.179</td>
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<td>Iron</td>
<td>London/Philadelphia</td>
<td>0.750</td>
<td>0.434</td>
<td>0.206</td>
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<td>Cooper</td>
<td>London/Philadelphia</td>
<td>0.327</td>
<td>0.136</td>
<td>-0.001</td>
</tr>
<tr>
<td>Wool</td>
<td>London/Boston</td>
<td>0.591</td>
<td>0.659</td>
<td>0.279</td>
</tr>
<tr>
<td>Tin</td>
<td>London/New York</td>
<td>0.159</td>
<td>0.053</td>
<td>-0.023</td>
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</table>
Refrigerated Transportation

1. 1857: First shipment of refrigerated beef from the Chicago to the East in an box car packed with ice.
2. 1867: First patent for a specialized refrigerator car.
3. 1873: T.C. Eastman exported chilled beef by ship from America to London (shortly annual tonnage of around 10,000 tons). The insulated cargo space was cooled by ice loaded on departure.
4. 1876-1877: C. Tellier and the steamship Frigorifique achieved the first overseas shipment of meat under artificial refrigeration (France to Argentina and back).
5. 1878: G.F. Swifts put into operation a refrigerator car to ship fresh meats. Fifteen years later 97,000 cars.
6. 1879-1880: The Strathleven, equipped with an air machine and loaded with beef, mutton, butter and kegs, sailed from Melbourne to London (9-week voyage of about 24,000 km).
7. 1885: Berries from the Norfolk (Virginia) area were shipped by refrigerator car to New York.
8. 1901: First refrigerated banana ship, the Port Morant.
Global Division of Labor

- First truly global division of labor.

- Three areas:
  2. Areas of European settlement: West of the United States, Canada, Australia, New Zealand, Argentina.
  3. Areas of commodities: Malaysia, Colombia, Cuba, Brazil, or Ghana (and, to some degree, the U.S. south).

- How do economists explain trade:
  1. Comparative advantage (Ricardo).
  2. Different endowments (Heckscher-Ohlin).
  3. Increasing returns to scale (Dixit-Krugman).
Figure 9.3: The Growth of North Atlantic Manufacturing Exports

Manufacturing Exports as a Share of GDP (10 Industrial Country Average)

- 1700: 4%
- 1800: 5%
- 1870: 8%
- 1913: 14%
Cities

- New York: from 60,000 inhabitants in 1800 to 3.5 million in 1900⇒port of U.S. trade.

- Melbourne: settled in 1837, by 1900 800,000 inhabitants, third largest city of the British empire⇒gold.

- Calcutta: small village in 1800, 700,000 inhabitants by 1900⇒export of dyes and coarse fibers from Bengal.

- Alexandria⇒Egyptian cotton.

- Lagos⇒palm oil and cocoa.

- Buenos Aires⇒refrigerated meat.

- Shanghai⇒Western traders in China.

- Smyrna (current Izmir)⇒Ottoman empire, Opium exports to China.
Role of the British Empire

- After Napoleon is defeated, the British are the world hegemon.

- Pax Britannica ⇒ role of the Royal Navy ruling the seas. That is why the Battle of Gettysburg is so important.

- Basic institutions:
  1. Gold standard. How did it work?
  2. Contracts and legal system.
  3. Banking and insurance.
Penang Island
Botanic Gardens

- GeorgeTown was established on Penang Island in August 1786.

- The East India Company wanted a base to challenge the Dutch spice trade and maritime supremacy in the Straits of Malacca.

- When the British come they build:
  1. Fort.
  2. Dock.
  3. Botanic garden, subordinated to the Kew Gardens in London.

- Why do you want to do that?
Rubber

- In 1876, 70,000 seeds of the rubber tree, painstakingly collected by botanists in the Amazon rain forest, were brought to Kew Gardens and planted in a greenhouse.

- About 2,800 of them germinated and were shipped to the botanical gardens in Sri Lanka and Penang.

- They propagated explosively and were used to establish rubber plantations on the neighboring Malay Peninsula.

- Until Germans invented synthetic rubber, it was a key commodity for the world economy.

- Chinese move in and establish businesses. Tamils and Sikhs came from across the Bay of Bengal to work at the rubber plantations. Political economic consequences.

- Similar examples with tea shrub to Ceylon, and coffee tree to Kenya.
Imperialism

1870-1914 is the high water mark of European imperialism:

1. Scramble for Africa: Berlin Conference (1884 - 1885) between Britain, France and Germany.
2. Asia.
3. Informal empire in South America by U.K. and U.S. (Cuba, Panama,...).

Motivation for empire:

1. Empire as a rat race.
2. Empire as a protected area for exports of goods and capital (John Hobson, Imperialism: A Study).
A. Drexel and J.P. Morgan create modern investment banking.

Drexel, Morgan & Co. founded in 1871 to be an agent for Europeans investing in the United States (at Drexel death, the company becomes J.P. Morgan & Co.).

Integration of financial markets.

Role of finance:

1. Intermediate between savers and investors.
2. Distribute risk.
3. Transform short-term debt into long-term loans.
The Rise of the Modern Corporation

Alfred Chandler, The Visible Hand, Scale and Scope.

- Original problem for railroads: coordination and control.
- Cost accounting, HR, marketing, etc...
- New technologies inherent increasing returns to scale.
- Externalities.
- Appearance of modern management schools and the profession of manager.
- How do economists think about this? Coase, Hart...
The Invention of Invention

- Before 1870 Universities and formal institutions had played a limited role on invention. Instead, individuals.

- Modern research university: John Hopkins in 1873 based on a previous German model.

- Modern research lab: Menlo Park and Edison.

- Integration of industry and universities.

- National labs.

- Perhaps, even deeper, conceptual change: innovation as a product.

- Patent and copyright versus Open-source.