European Expansion: Europeanization of the International Economy and Industrial Revolution

Europe in World Economy 2017

International trade

- **Opportunities beyond limits of domestic market** and **agricultural productivity** – international **division of labor** (A. Smith: DoL - extent M);
- IT – **most dynamic element** of early modern European **economy**;
  - i.e. **Holland** – **shift** towards **livestock** and diary, **fishing**, **urban expansion**;
  - Shift of **basic agriculture** into **Eastern Europe** (intensifying feudal methods of exploitation there);
- Initially little to do with **free markets** (FM) – **governments** trying to **force competing** nations **out** of markets;
  - **Mercantilism**: nations' **wealth grows** by **achieving favorable balance of trade**; **exclusion** of foreign **competitors rather than** attempt to gain **competitive strength**;
  - **Primary** economic **aim** of merchants and conquerors was to **create protected niche** in world market **without competition** from **other Europeans** (Estado da India, EIC, VOC);

Table 1.4 Estimates of the size and regional distribution of the European merchant fleet 1500–1780

	Total fleet size (000 tons)	Capacity per 1000 inhabitants (tons)	Regional shares in European fleet capacity				
			Southern Europe	Netherlands	Great Britain	France	Hansa
1500	200–250	3.2–4.0	40	16	10–12	?	20
1600	600–700	7.7–9.0	25	33	10	12	15
1670	1000–1100	12.8–14.1	20	40	12	8–14	10
1780	3372	30.7	15	12	26	22	4

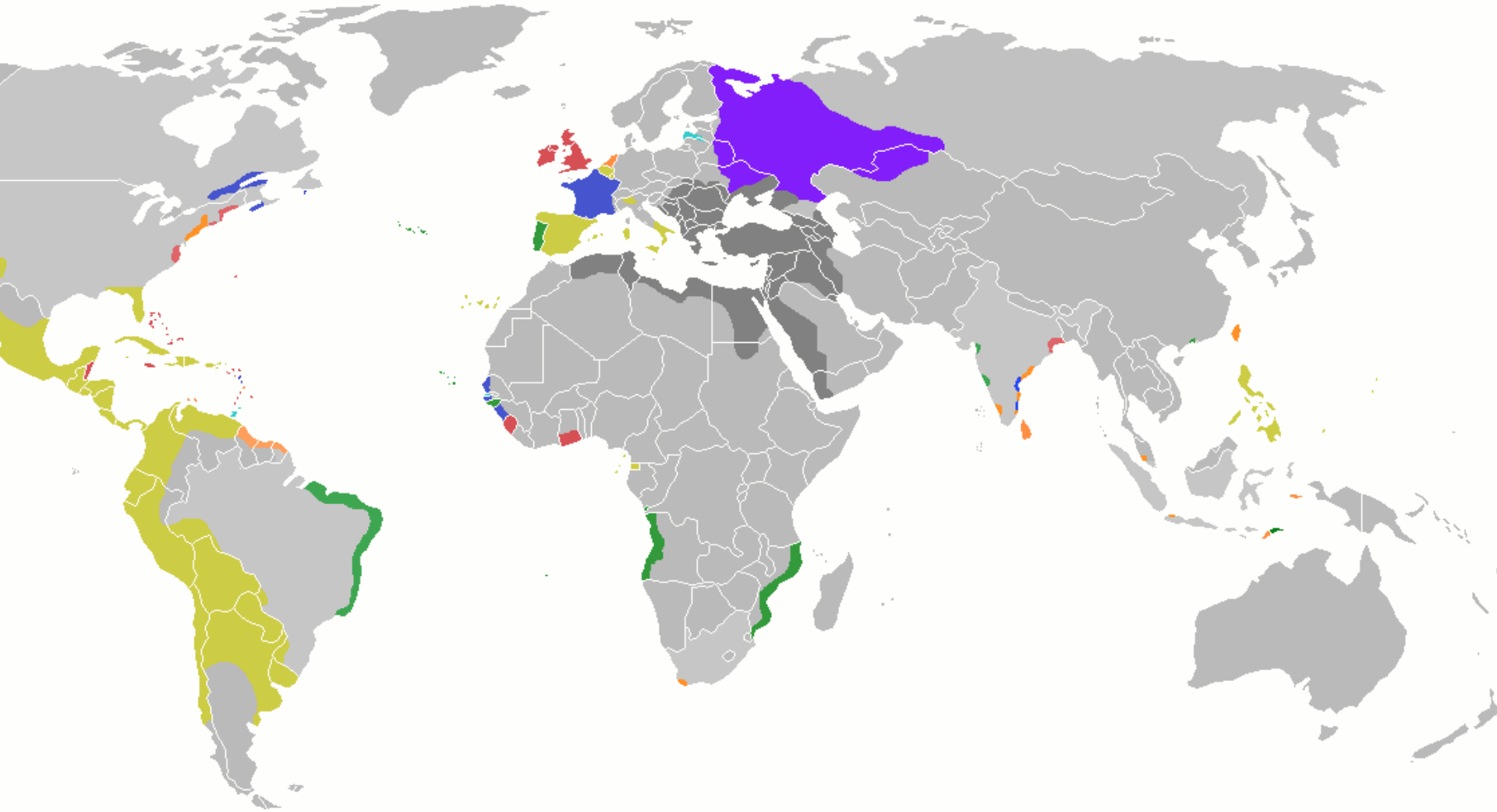
Sources: Romano (1962), Vogel (1915), Lane (1966, 5–20) Van Zanden (1987, 587), Wilson (1977, 129).

Table 2–15. **Carrying Capacity of Dutch and Other European Merchant Fleets, 1470–1824**
(metric tons)

	1470	*1570*	*1670*	*1780*	*1824*
Netherlands	60 000	232 000	568 000	450 000	140 000
Germany	60 000	110 000	104 000	155 000	
Britain	n.a.	51 000	260 000	1 000 000	
France	n.a.	80 000	80 000	700 000	
Italy, Portugal, Spain	n.a.	n.a.	250 000	546 000	
Denmark, Norway and Sweden				555 000 [a]	
North America				450 000	

Table 2–18a. **Dutch Involvement in European Military Conflicts, 1560s–1815**

Wars with Spain to establish and guarantee Independence	***Wars of commercial interest with England***	***Wars over European balance of power, territory & religion***
1560s–1609	1652–4	1618–48: 30 Years War
1621–48	1665–7	1688–97: War of League of Augsburg
	1672–4	1701–13: War of Spanish Succession
	1780–3	1756–63: Seven Years War
		1795–1815: Revolutionary & Napoleonic Wars



The Struggle for Colonial Dominion, 1700—1763.

Table 2–20. **Commodity Composition of European Exports from Asia to Europe, 1513–1780**

Portugal (Estado da India — state trading, headquarters Goa)
(per cent by weight)

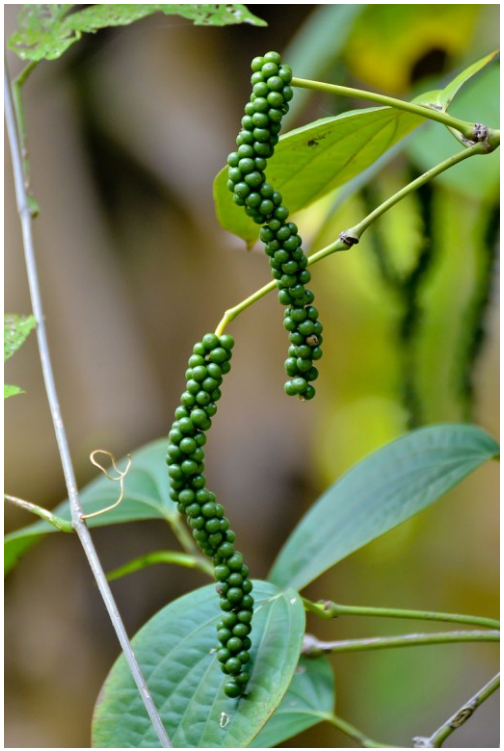
	1513–19	*1608–10*
Pepper	80.0	69.0
Moluccan Spices	9.0	0.03
Other Spices	9.4	10.9
Textiles	0.2	7.8
Indigo	0.0	7.7
Other	1.4	4.6

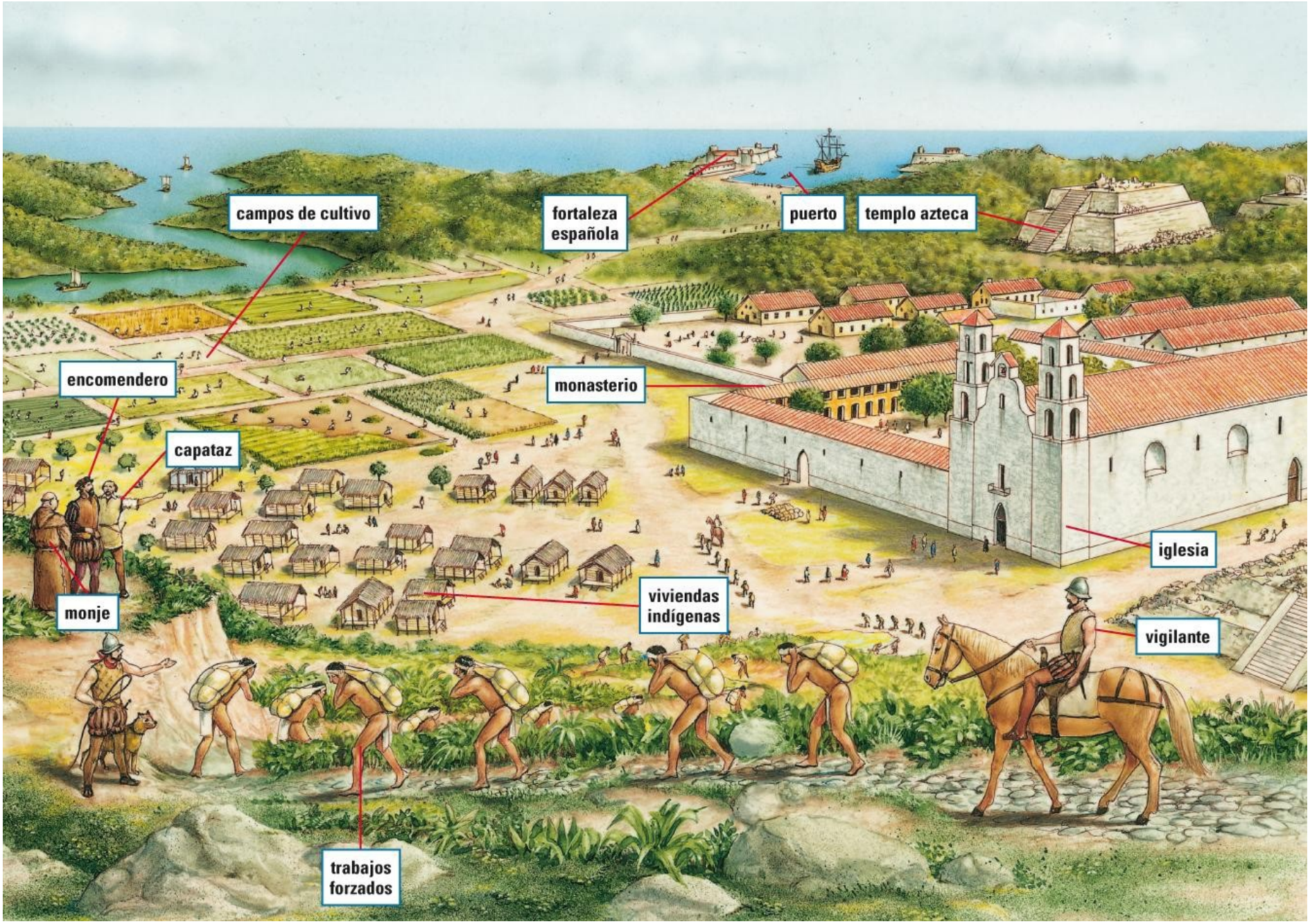
Dutch East India Company (VOC corporate monopoly, headquarters Batavia)
(per cent by value)

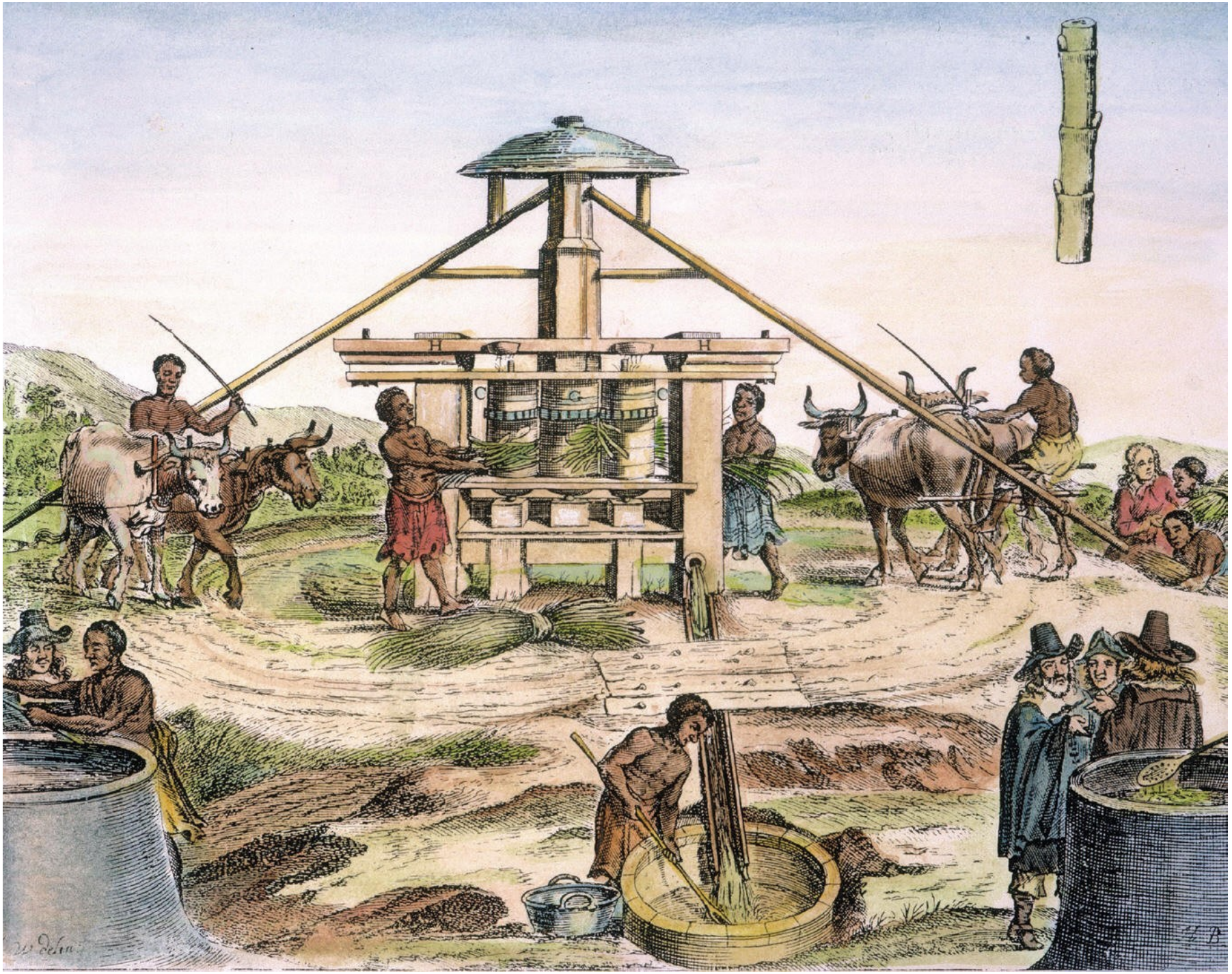
	1619–21	*1778–80*
Pepper	56.4	11.0
Other Spices	17.6	24.4
Textiles & Raw Silk	16.1	32.7
Coffee & Tea	0.0	22.9
Other	9.9	9.0

English East India Company (EIC corporate monopoly operating
mainly from Bombay, Calcutta and Madras)
(per cent by value)

	1668–70	*1758–60*
Pepper	25.3	4.4
Textiles	56.6	53.5
Raw Silk	0.6	12.3
Tea	0.03	25.3
Other	17.5	4.5




campos de cultivo
fortaleza española
puerto
templo azteca
encomendero
monasterio
capataz
iglesia
monje
viviendas indígenas
vigilante
trabajos forzados


H
H
C
G
C

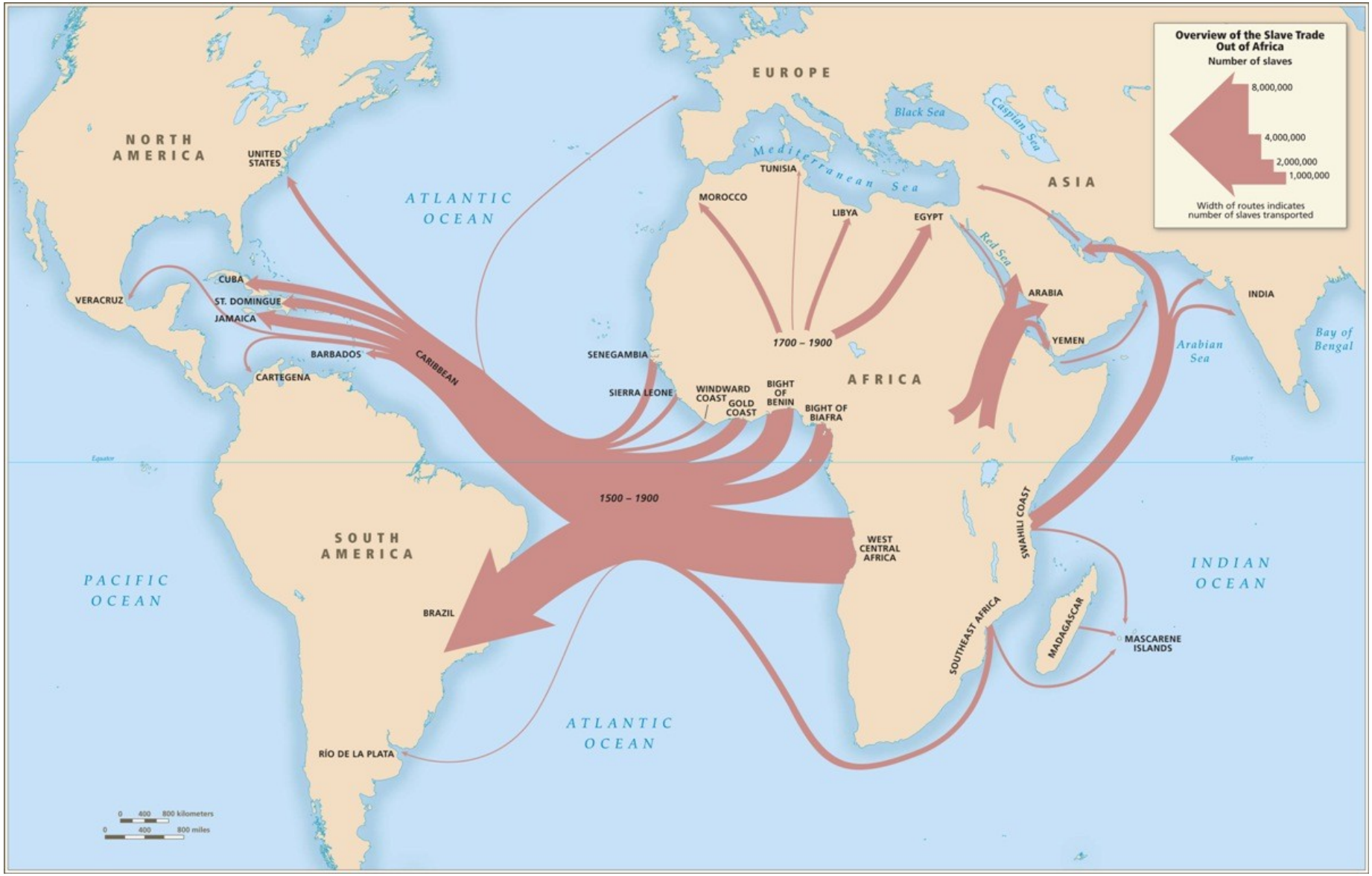
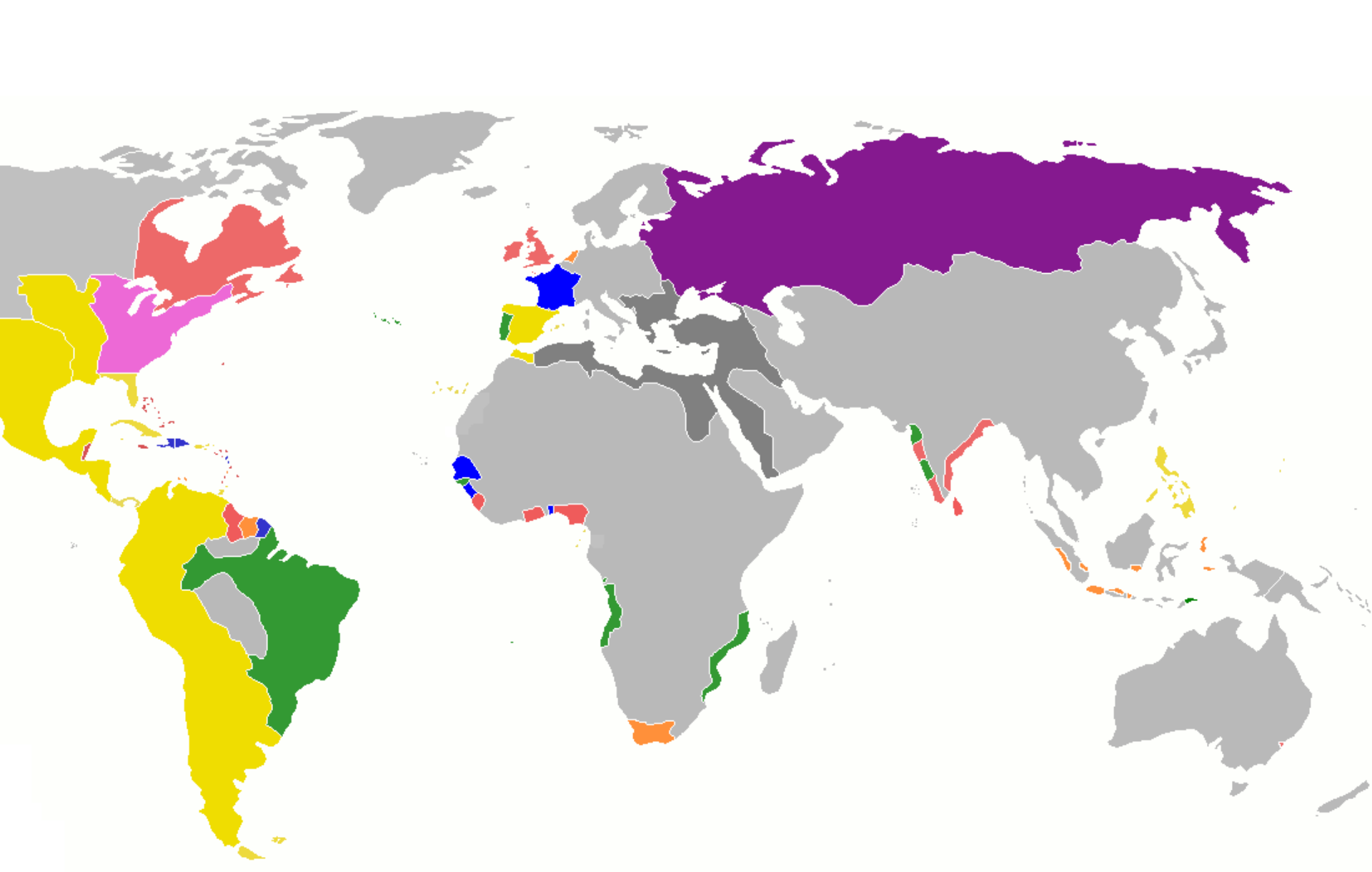

Overview of the Slave Trade Out of Africa
Number of slaves
8,000,000
4,000,000
2,000,000
1,000,000
Width of routes indicates number of slaves transported
NORTH AMERICA
UNITED STATES
EUROPE
Black Sea
Caspian Sea
Mediterranean Sea
ASIA
ATLANTIC OCEAN
TUNISIA
MOROCCO
LIBYA
EGYPT
Red Sea
ARABIA
INDIA
Bay of Bengal
Arabian Sea
YEMEN
CUBA
VERACRUZ
ST. DOMINGUE
JAMAICA
BARBADOS
CARTEGENA
CARIBBEAN
1700 – 1900
SENEGAMBIA
SIERRA LEONE
WINDWARD COAST
GOLD COAST
BIGHT OF BENIN
BIGHT OF BIAFRA
AFRICA
Equator
1500 – 1900
SOUTH AMERICA
WEST CENTRAL AFRICA
SWAHILI COAST
PACIFIC OCEAN
INDIAN OCEAN
BRAZIL
SOUTHEAST AFRICA
MADAGASCAR
MASCARENE ISLANDS
ATLANTIC OCEAN
RÍO DE LA PLATA
0 400 800 kilometers
0 400 800 miles

Table 2–5. **Atlantic Slave Shipments by Portugal and Its Competitors, 1701–1800**
(000)

England	2 532	North America	194
Portugal	1 796	Denmark	74
France	1 180	Other	5
Netherlands	351	Total	6 132

Source: Lovejoy (1982), p. 483.

FIG. I.
FIG. II.
FIG. III.
FIG. IV.
FIG. IV.
Store Room
Store Room



Industrial Revolution

- **18th** cent. series of **inventions transformed** the British **cotton manufacture**: **new mode** of **production** – the **factory system**;
- **Principles**: (*Landes*)
  - The **substitution** of **machines** (rapid, regular, precise, tireless) **for human** skill and effort (converting **heat into work**);
  - Use of **new** and more abundant **raw materials** (substitution of **coal for wood and** animal);
- In **past** – **better living standards** had always been **followed** by a **rise** in **population**-> eventually **consumed** the **gains** (**Malthusian trap**) (*Clark*);
- **IR:** for the **first time** in history – both the economy and knowledge were growing fast enough to generate a continuing flow of improvements -> considerably **rising standard of living**;

(Landes)

- **14th Italy** –water powered **silk** **spinning**– industry prospered for centuries;
- **England** built a large **water powered mill** employing hundreds workers;
  - comparable to the **cotton mills** of later era (late 18th century);
  - more than **enough** to accommodate England's **demand** for silk yarn – costly material, small clientele;
  - **No** industrial **revolution** of silk;
- **Wool** much more important in Europe - **role of cotton** accident;
  - Wool industry protected by prohibition of imports of Indian calicoes (British capital and labor would be hurt);
  - Factory (power machinery) industry production: raw cotton -> cotton yarn (fustian, flax)… British capital and labor is promoted);
  - Deindustrialization of Asia;

- System of **rural manufactures** (dispersion of activity **- costs** of distribution and collection);
  - **Idea of large workshops** where spinners and weavers under **supervision**;
- Manufacturers had to **pay to persuade people out of cottages** and into mills –
  - So long as the **equipment** in the **mill** was the **same** as in the cottage, mill **production cost more**;
- It **took power machinery** to **make** the **factory competitive**
  - In spite higher wages mills still seemed a prison;
  - Where to **get labor force**? **Children**, often conscripted from the poorhouses and **woman**, especially unmarried;
- **Wool** fibers **troublesome** - **cotton docile**, investor turned attention;

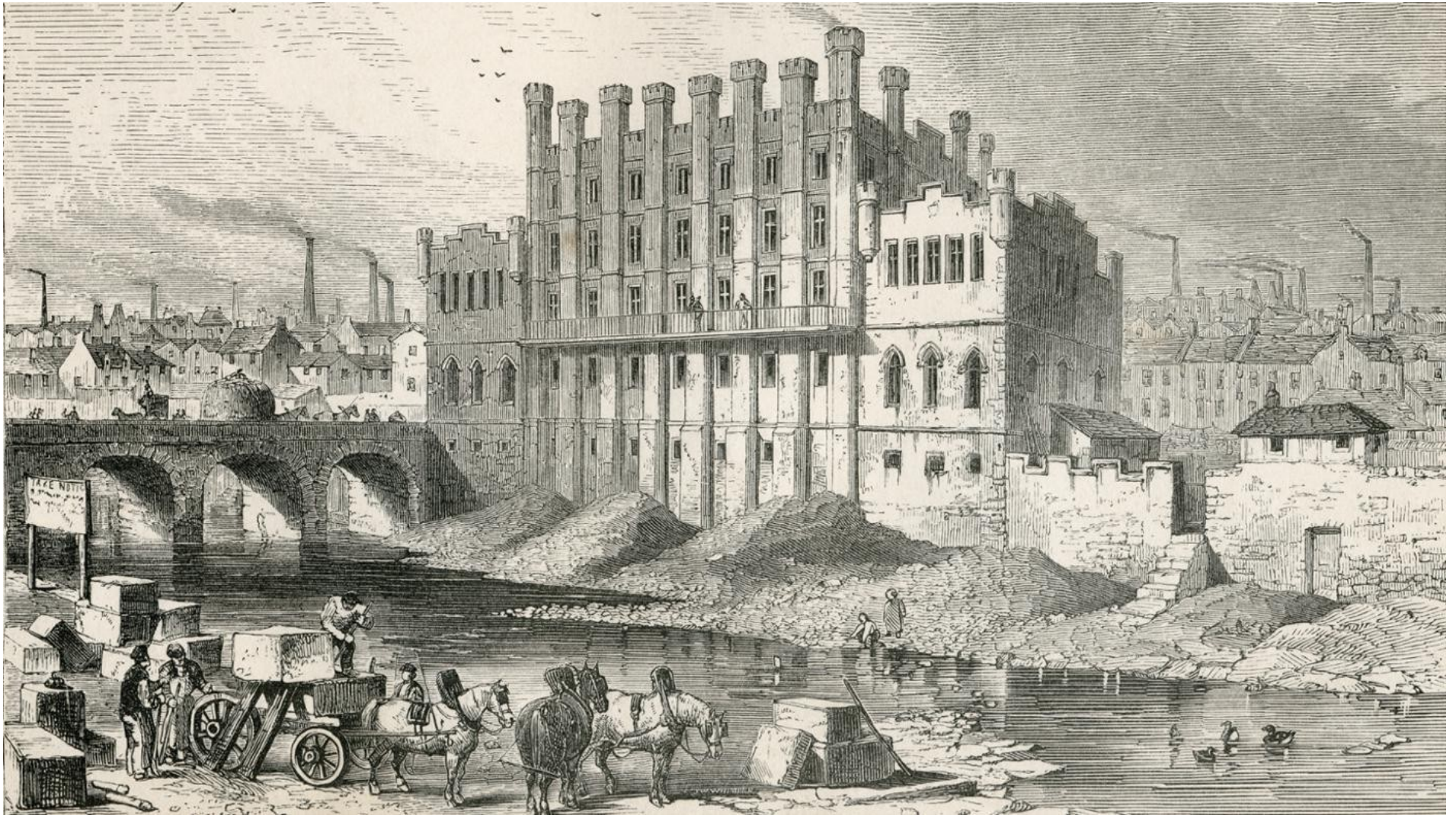
Steam power (*Landes; Cameron, Neal*)

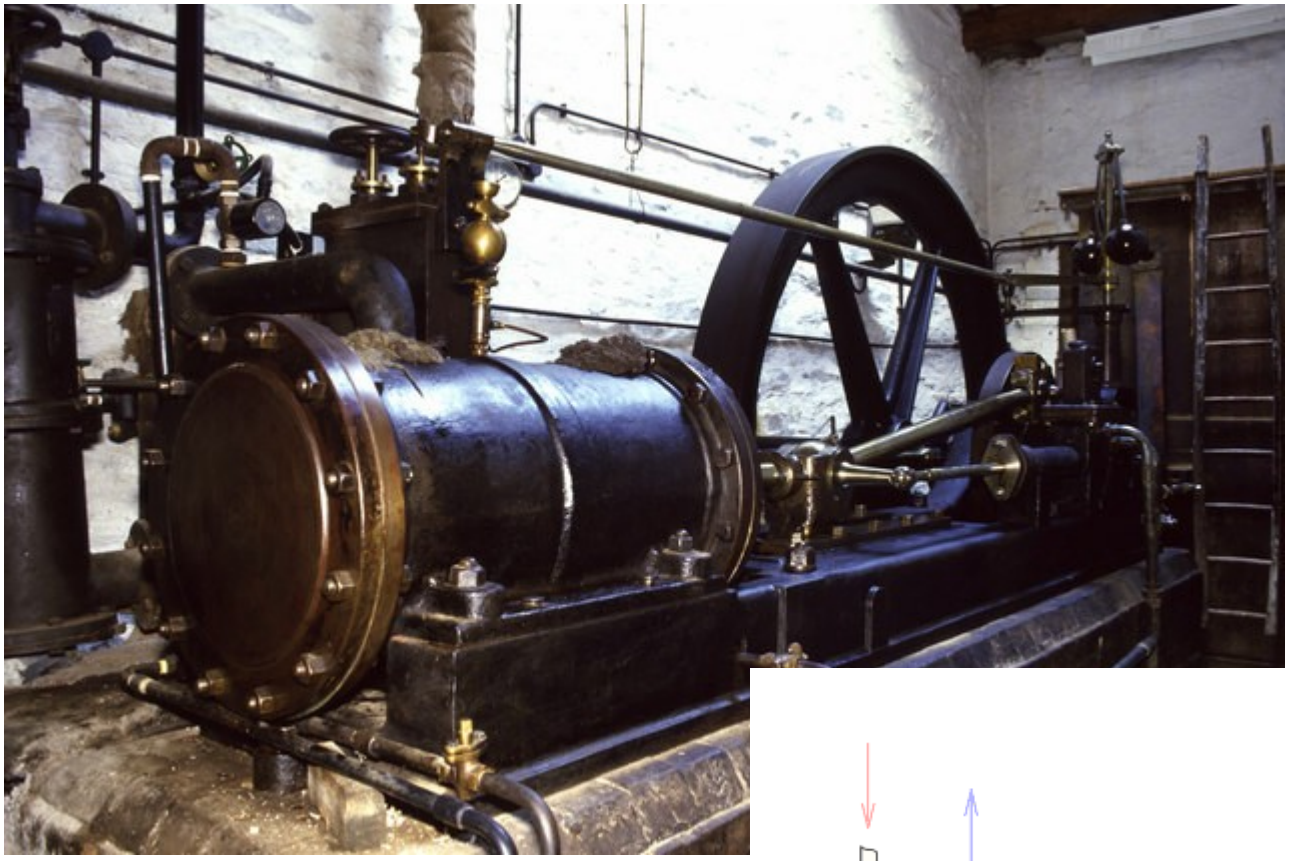
- **Vacuum pump** (*Savery* 1698);
- First **steam engine** *Newcomen* (1705);
- *Watt* (1768) engine with separated **condenser** (profitable **away** from the **mines**);
- 15 years to adapt for **rotary motions**;
- **High pressure** engines more compact and used to drive **ships** and land **vehicles** (another 25 years);
- *Parsons* (1884) replacing the piston with a **steam turbine**;

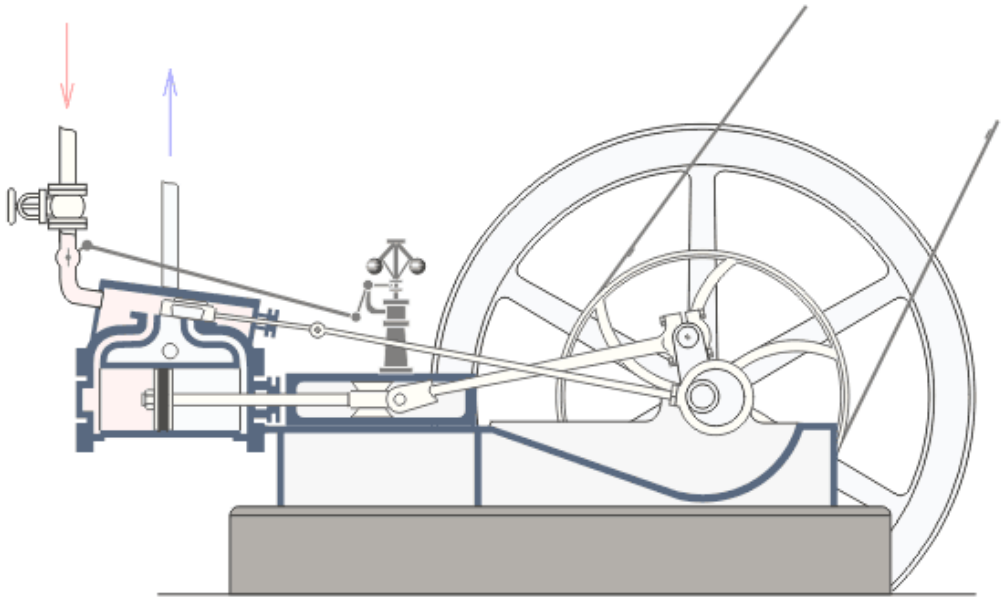
- *Darby* (1709) **coke smelt** of iron;
- **Cast iron** –> pots and pans, pipes; **moving parts -** require resilience and elasticity - **steel**;
- **Cheap steel** – *Bessemer* 1856;
  - transformed industry and transportation (**arms**, razors vs. rails and **ships**);

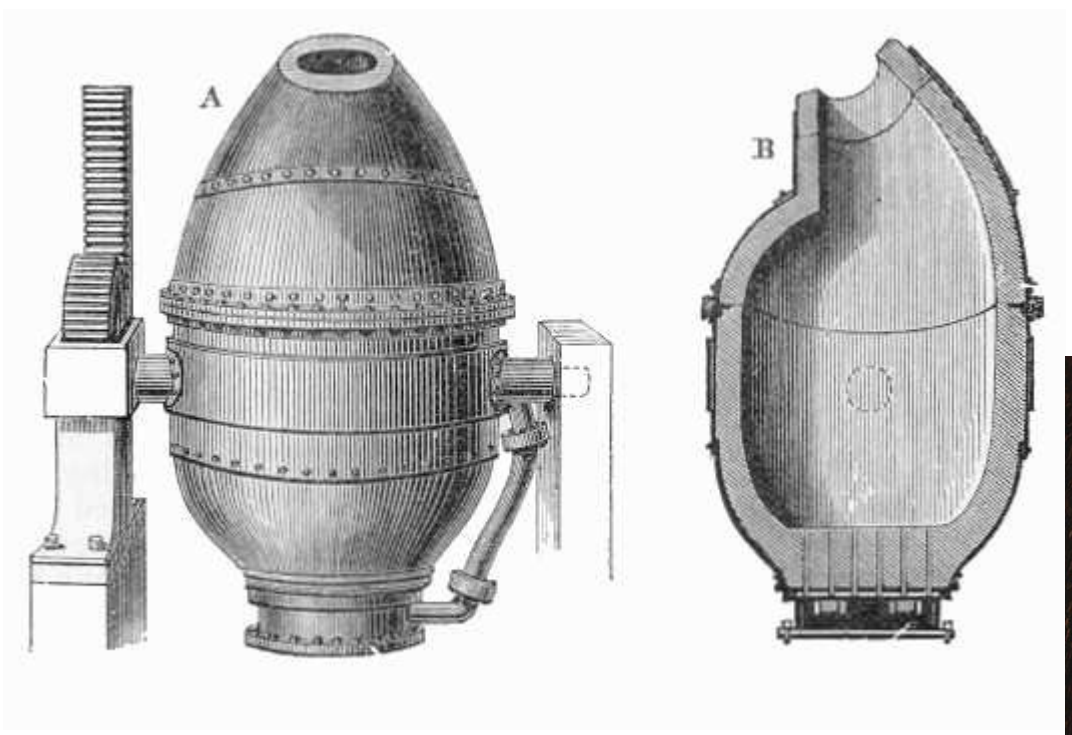
- **Powered machinery**
  - **Device to move a tool** – to do the work of the hand;
  - **Enhance speed** and **force** (printing press, drill, spinning wheel);
  - **Battery** of tools – multiply the work performed by a single motion;

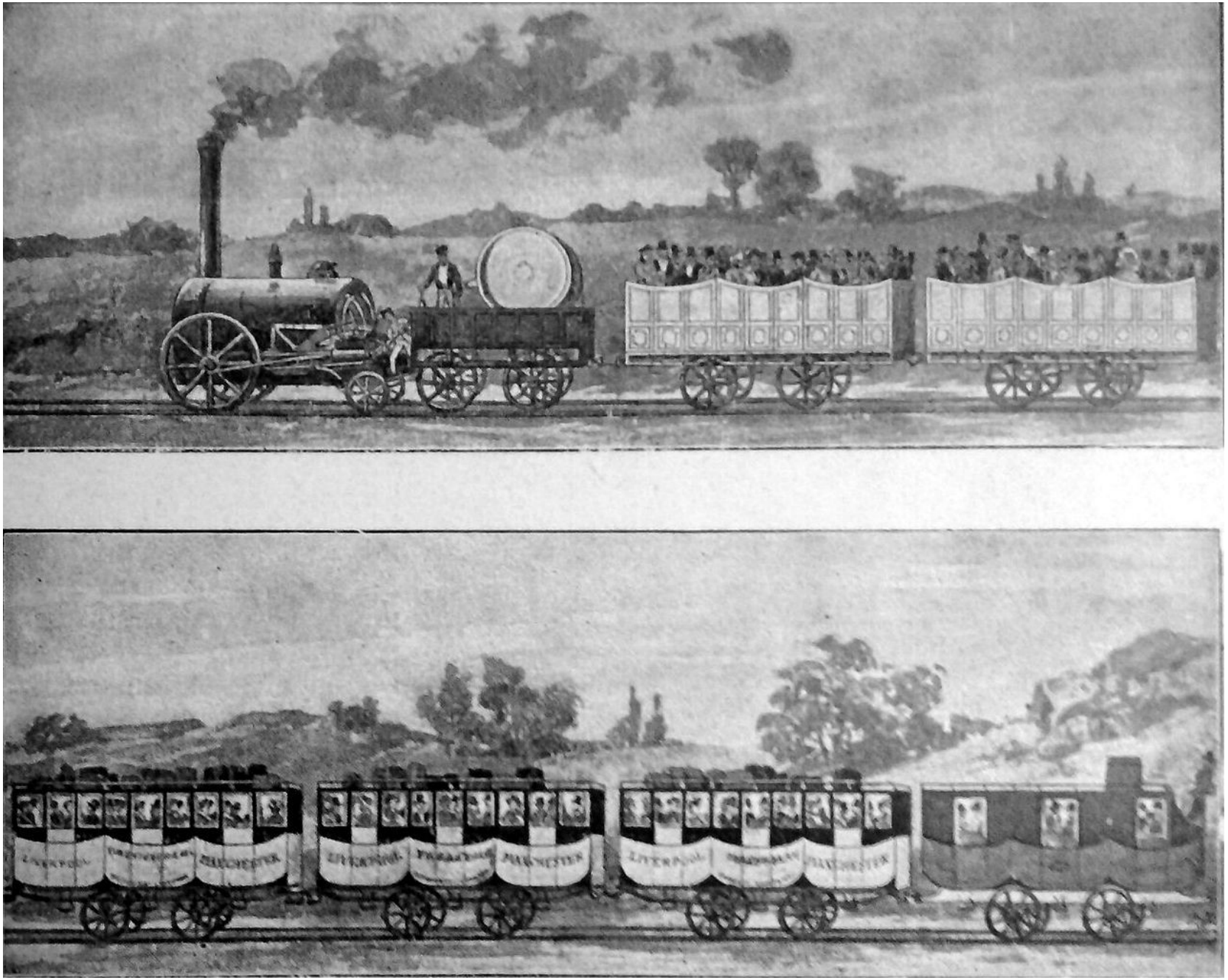
- Next step – simplifying by dividing, **breaking** up the **task** into a succession of **repeatable processes**;

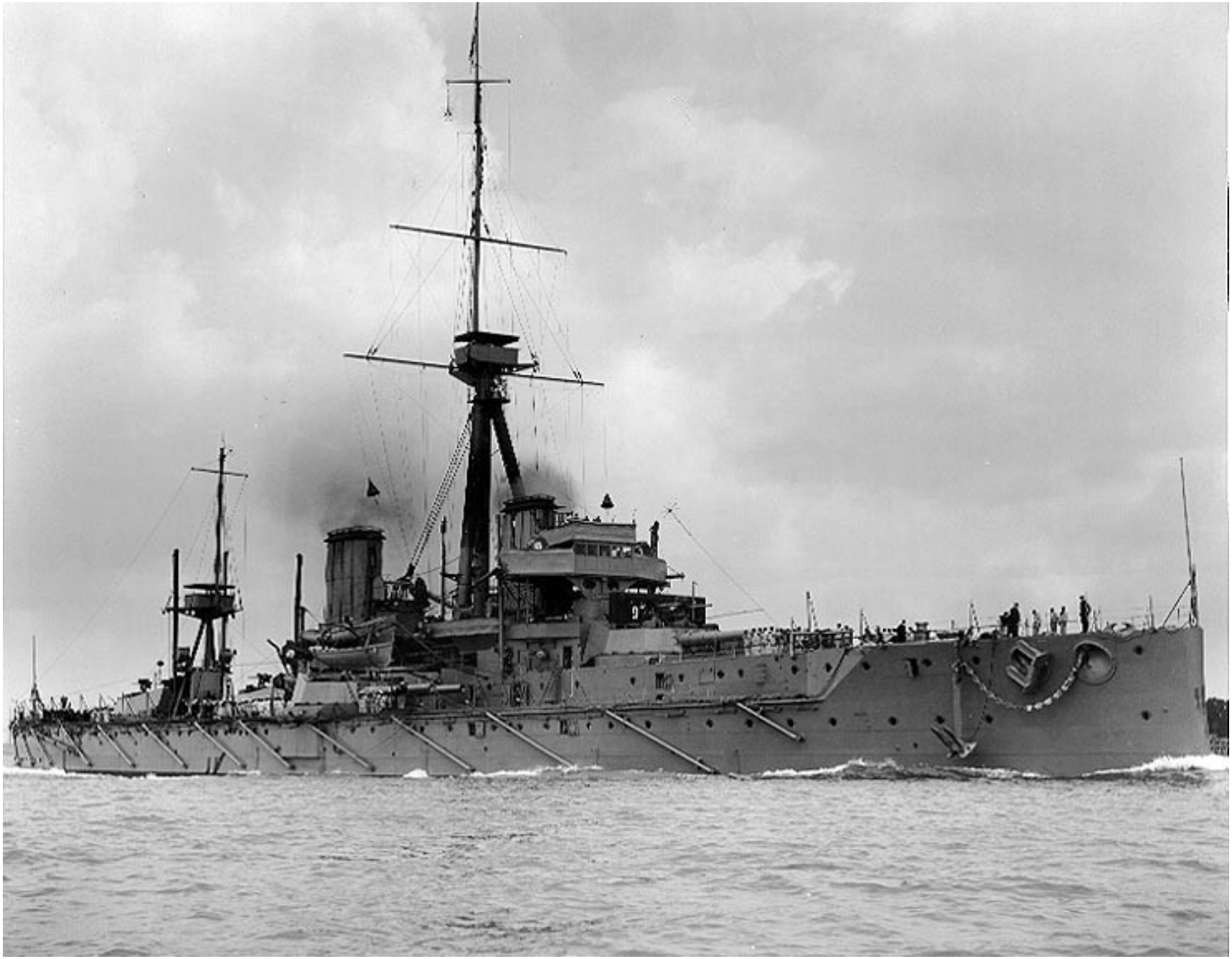







A
B





Great Britain – early being nation

- Purchasing power of the **lower classes** –> **ability to buy beyond necessities**
  - great English **middle class** – merchants, shopkeepers, manufacturers, bankers, men of law;

- **Mechanization** -> higher **productivity** -> higher **wages** -> increased **demand** (for manufactures) -> **larger market and specialization…**
  - English have **grown rich by consuming** – ran against the folk wisdom – thrift and abstemiousness („habit of French peasants“, *Aldcroft*); (*Calicoes, Corn Laws*);

- Result: **aimed** at a large **national** and **international market** and **focused** on **standardized** (manu) **goods** of **moderate prices** – the kind that lent themselves to **machine production**;

Table 1.5 Estimates of the development of GDP per capita at constant prices in six European countries 1500–1820 (UK 1820 = 100)

	1500	1570	1650	1700	1750	1820
UK	45–49[a]	45[a]	54[a]	68	81	100
Netherlands	60	60	98	97	95	89
Belgium	55	65	63	66	72	74
Italy	75–76[a]	62–66	71	71	62–66	62
Spain	0	55–61	49–62	50–56[a]	51–53	61
Poland	51–60	48–56	48–55	40–46	34–37	46
Unweighted average	57–60	55–58	63–67	65–67	66–67	72
Coefficient of variation	0.17[b]	0.14	0.25	0.25	0.29	0.26

Notes:
[a] Intrapolated.
[b] Excluding Spain.
Italy – first estimates date from 1380 and 1450.

Source: Van Zanden (1997).

Table 2.3 British share of some European products (per cent)

	1800	1830	1870
Pig iron production	29	45	58
Raw cotton consumption	65	66	57
Coal production	85	78	63
Railway mileage open	—	90	24

Source: Bairoch (1976a, 129).

Table 2.4 Regional percentages of total trade 1830–60

	Exports to					
	Europe	North America	South America	Asia	Africa	Oceania
1830						
from UK	46.7	25.5	11.5	12.8	2.5	1.0
from continent	82.0	6.6	6.3	3.8	1.3	—
1860						
from UK	34.3	16.6	12.0	25.7	3.2	8.2
from continent	82.0	5.8	5.8	3.1	3.2	0.1

Source: Bairoch (1976a, 88).

France – strongest on the continent…

- 1815 **lost** sugar **colonies** (Caribbean), prosperity of **Atlantic ports** **undermined;**
- **Markets** for **cheap machine** produced goods **dominated by GB**;
- Large **peasant class**, **rooted** to land;
- New industries: **lacked coal**; **transportation** underdeveloped;
- **Slow to adopt** the **new cost-reducing technology** or expand into new product markets;
- Alternative explanation (*Aldcroft*) - **Different route**;
  - **Less necessary** to **sell** goods **abroad** to feed population;
  - **GB preempted overseas markets** for cheap mass production – **France** did well to concentrate on **quality goods** (skills, taste, designs – edge);
  - Much **slower population growth;**
  - Industrial **labor** more **productive** than in **GB**: high-quality production; low productivity **agriculture** kept down overall figures;
- **Quality engineering, construction and architecture, road system** and canal network;
- **Railway building** on large scale since 1840s (1850: 2,5k km, 1870: 17,5 k) – helped develop iron and engineering industries, investment banking skills
- **Outside Europe** very **minor role** compared to GB;

Germany

- Soon to grow into leading **industrial** power – until 1870 collection of independent states (**Custom Union**);
- Overseas trade through NED;
- GER territories in terms of **modern industrial sector** **overtaking** France **1850-1870** (2x coal, iron 1,1; steel 1,8x); large scale **state intervention**;
- **Railway building:** leading sector – outperformed FRA (1851-1869 10-20% of total investment) – creating engineering industry out of nothing;
- Despite expanding mercantile fleet, **foreign trade played a lesser** part (92% exports to Europe);
- Major source of overseas **emigration** from 1840 onwards;

Belgium

- **Resembled GB most closely**: tradition in **metallurgy** and **textile**, plenty of coal, iron, easy international transport (+ early rail), GB example, neighboring FRA and GER – government inclined to favor business;
- First install **coke smelting**, paper, glass, output coal, iron, machinery…
- Railway network closest to GB level; **export** per head even higher;

Switzerland

- **No coal**, no iron ore, no access to the sea, surrounded by large protectionist countries;
  - Assets: **skilled** educated **labor force**, some capital accumulations, plenty of **water power**, **trading tradition** (could not feed itself in grain; city belt);
  - **Cotton spindles** (10x 1814-1870), machine building and engineering next;
  - **Conquered** foreign **markets with high quality products** (cotton, embroidered goods, lace, silk, watches);
  - High degree of **division of labor** (decentralized production) - **instead** of a **factory**;
- Unique – **concentration** on **overseas markets** (**neighbors** unstable and **protectionist**); 1845 **64% went overseas** (**US main** market), only 36% to Europe;
  - **Free trade drive** in **Europe** since **1860** (still 37% extra Europe);
  - Per head export greatly exceeded GB, BEL;

United States

- Starting as a **colonial** type **economy** -> expanding **primary exports** at a fast rate -> **1870** major **industrial power** (inward oriented);
- **1870** – still essentially **agrarian state**, but shrinking employment and output -> **manufacturing**;
- **Leading industry: Cotton textile** (value added 16k USD in 1805 -> 930k in 1820 -> 48,4mil in 1860), coal, iron mining;
  - Using **GB technology** first – **innovations**, different form of **factory organization**;
- US technology leading in wood-working machinery, high-pressure steam engines,
  - **American system of manufacture** – the **mass production** of **composite articles** using **interchangeable** parts;
- By 1870 US 23% of world industrial output (despite civil war);
- Rich in **land** and other NR as well as in **capital** – but **short of labor**:
  - Tend to **go for innovations -** saving labor, **capital** (physical, human) intensive economy;
- **Europe** (FT window) main market for US **primary product exports**, creating **ELG** in critical period.

A VIEW of the BOMBARDMENT of Fort M^c Henry, *near Baltimore, by the British fleet taken from the Observatory under the Command of Admirals Cochrane & Cockburn on the morning of the 13th of Sept 1814 which lasted 24 hours, & thrown from 1500 to 1800 shells in the Night attempted to land by forcing a passage up the ferry branch but were repulsed with great loss.*

Reference.
A. Fort M^c Henry
B. Lazaretto
C. [illegible] House
D. Admiral Ship [illegible]
E. Ferry and Fort

Table 2–24. **Structure of Employment in the Netherlands, the United Kingdom and the United States, 1700–1998**
(per cent of total employment)

		Netherlands	*United Kingdom*	*United States*
1700	Agriculture	40	56	n.a.
	Industry	33	22	n.a.
	Services	27	22	n.a.
1820	Agriculture	43[a]	37	70
	Industry	26[a]	33	15
	Services	31[a]	30	15
1890	Agriculture	36[b]	16	38
	Industry	32[b]	43	24
	Services	32[b]	41	38
1998	Agriculture	3	2	3
	Industry	22	26	23
	Services	75	72	74

a) 1807; b) 1889

Source: Maddison (1991a), p. 32 for 1700; Maddison (1995a), p. 253 for the United Kingdom and the United States 1820–90; Netherlands 1807 and 1889 from Smits, Horlings and van Zanden (2000), p. 19; 1998 from OECD, *Labour Force Statistics 1978–1998*. Agriculture includes forestry and fishing; industry includes mining, manufacturing, electricity, gas, water and construction; services is a residual including all other activity, private and governmental (including military).