

Lecture 3 & 4

Overview and some theory

Evidence

Chemicals

Iron and steel

Ship building

Cotton textiles

Conclusions- how well did industry perform pre 1914?

Overview and some theory

- (3) **Gerschenkronian** catch-up means poorer countries grow faster than rich countries via:
- Imitation of technology (they can just copy rich countries)
 - State and corporate power as a substitute for markets
- Abramowitz:** Gerschenkron is right, but catch up is contingent on *social capabilities* like:
- Human capital
 - Institutions ...so Britain's lead will dissolve.
- (4) Britain was the richest country (bar Switzerland) in 1900:
- By 1950, USA is substantially (130%) richer
 - By 1975, the UK is below the W. European average; Japan has caught up
- Gerschenkronian/Abramowitzian convergence predicts catch-up, not overtaking: *doesn't predict leader falling behind - "British Disease"*
- (5) **Gerschenkron** and **Abramowitz** allow us to explain why Europe catches up, 1950-73:
- Strong social capabilities
 - Educated population
 - Lots of technology to borrow (mostly from the US)
- But why does Britain not just lose its lead, but fall behind?
- (6) Perhaps British Entrepreneurs just got lazy: with *success of rail & textiles, they didn't invest in new industries (complacent)*
- Landes**, (1965): "Britain in the late nineteenth century basked complacently in the sunset of economic hegemony."
- Conservative culture created by past success: Slow to take up new methods.
- Cain and Hopkins** argued "Gentlemanly Capitalism" was cause: *they wanted to become financiers & achieve social status by going into services rather than manufacturing*: More concerned with foreign investment than UK industrial innovation.
- (7) Britain experiences relative productivity decline in all sectors, including industry:
- Long standing significant margin between Britain and USA, *which is basis for idea of 'Entrepreneurial failure'. US had giant internal markets and is protected by barriers (they had large, prohibitive tariffs).*
 - In pre 1914 period Britain was more productive than Germany
- The transatlantic productivity difference is not surprising given some key factors: *on supply side US workers are far less educated so are willing to use any technology that substitutes skilled labour for capital intensive machinery.*
- (8) This transatlantic productivity gap is explicable in terms of rational differences in technology:
- On *demand* side, US consumers prepared to accept higher degree of standardisation, facing US producers with a more homogeneous market. *Utilisation of high-throughput machinery: Henry Ford's production line.*
 - On *supply* side, shortage of skilled labour led to substitution of machinery for skilled labour in US, while abundance of *natural resources* allowed development of resource-using technology. *UK had contrasting set of endowments.*
- (9) Therefore, the use of different technology and less capital intensive production in Britain is not necessarily a sign of failure: **Landes versus Sandberg/McCloskey**. *Britain may have been doing as best as they could, given what they had.*
- McCloskey & Sandberg**: competition will ensure the correct choice of technology and prevent failure at industry level rather than just firm level - *the forces of competition mean things are being done as efficiently as possible in the UK. US tariffs: artificially competitive.*
- 2nd article.*
- (10) Pre 1914 British industry included:
- Chemicals
 - Iron and steel
 - Ship building
 - Automobiles
 - Other engineering
 - Cotton textiles
- Therefore, we need to make more accurate considerations about different types of industry rather than aggregate judgements
- (11) Clear that in most industries the US was more productive than Britain. However, possible that the exceptions provide key insight. For manufacturing as a whole, the US lead was about 2:1 (*US worker twice as productive as UK worker in labour productive per hour*)
- (12) Britain did relatively well in industries where flexible production techniques remained competitive despite adoption of high-throughput techniques in USA. Britain's success based on Marshallian external economies of scale (*lots of firms in same industrial structure: division of labour, shared workforce*) E.g. The cotton textiles industry in Lancashire.
- (13) Also, Brit did well in industries where mass production techniques had still not been successfully applied, even in USA:
- E.g. Shipbuilding (flexible craft based means of production), where British industry actually had a small productivity lead *because they were outright more efficient: skilled labour*.
- (14) Also, Brit did well in industries where demand factors allowed early adoption in Britain of mass production techniques (E.g, seedcrushing, coke, sugar refining and tobacco)
- (15) Poor productivity performance (US Y/L lead more than 2:1 average) in industries where high throughput techniques developed successfully in US.
- But demand conditions or resource and factor endowments prevented adoption of such techniques in Britain (E.g. motor vehicles, where no mass market existed in Britain). *UK couldn't compete in other industries: in car production US had factor endowments and internal market. UK conditions simply not conducive towards mass production.*
- (16)

Chemicals

- (17) Sulphuric acid production is often used as the measure for the size of the chemical industry pre 1914.
- Sharp fall in GB share of sulphuric acid production:
- In 1867 Britain produced 30 percent of the world total
 - In 1913 this had declined to 10 percent
- Industrial products like sulphuric acid, dye, oil refining and perfumes had been around for a while. New chemical products were being introduced in Germany, however- organic chemistry & synthetic dyes.*
- (18) However, negativity is overstated when we consider all of chemical industry: There is widespread perception of poor performance and a technological lag in British chemical industry. *This is an example where British entrepreneurs had two methods available, and picked the wrong one (Entrepreneurial failure?). The LeBlanc process for soda ash production persisted instead of adopting the Solvay plant.*
- E.g. Failure of GB companies to compete with Germany in synthetic dyestuffs
- (20) Solvay Plant (c.1920)
- (21) Solvay Plant (c. 2000)
- (22) i. Solvay v Leblanc:
- Most obvious gain from switching to Solvay process is the reduction in average costs of output. Subsequent price reduction a result of reduced average cost. Leblanc cartel caused a reduction in dead weight loss and distortions. *There was technological conservatism.*
- (23) i. Solvay v Leblanc:
- Lindert & Trace** see no substantial foregone profits from retention of Leblanc capacity before 1886: Mainly because of high royalty payments, which were high at 8s. per ton. *L&T find there was a cartel, therefore reduced comp pressure - they need to find foregone profits to find examples of inefficiencies - such as royalties. The advantage to switching methods was therefore blunted: lower incentive as patent holders capture profits rather than manufacturer.* Total production costs c. £6 per ton in 1870s and £3 per ton by early 1890s.
- (24) i. Solvay v Leblanc:
- Also, the gains from switching became a lot higher in the early C20:
- Gains from switching in 1894-1899 = £440,000 pa
 - Gains from switching 1900-1914 = £760,000 pa
- But still: little excuse for not switching in 1890 when most of remaining Leblanc producers merged to form United Alkali Company (UAC).
- (25) i. Solvay v Leblanc:
- Even **Sandberg** claims that Britain should have made the switch a lot sooner (optimal switching point = late 1890s). Most important lesson from this example is that failure occurred in an industry subject to a collusive agreement. *There may be entrepreneurial failure here - if there's a profit motive they will switch, however, is there's a cartel they won't.*
- (26) ii. Synthetic dyes:
- British chemical industry pre-1914 failed to establish a significant synthetic dyestuffs industry based on coal-tar. Success of Germans in dominating world production of dyestuffs all the more remarkable because:
- Britain was world's most important textile producer and textile producers were main customers for dyes
 - The first synthetic aniline dye was produced in Britain in 1856, by Perkin
- New, innovative, synthesising industry pioneered by Germans: UK exports tonnes of textiles & fabrics so would have been useful industry for Britain.*
- (27) ii. Synthetic dyes
- Simplest explanation of rise to dominance of German dyestuffs manufacturers:
- Greater pool of scientific resources: *agglomeration of German scientists - Oxbridge model hadn't caught up.*
 - Due to government support for science and technical training.
- Alternatively Allegations of anti-competitive practices by German firms, including dumping of alizarin dyes when GB production started in 1883 - *German manufacturers were highly strategised and forced competitors out.*
- (28) iii. Soap
- Things less bleak in other branches of chemical industry (soap, explosives, others). In soap, Britain had a healthy balance of trade surplus thanks to *strong presence of Unilever*. This healthy surplus increased 1900-13 as exports increased with aggressive marketing strategy of Lever Brothers and others
- (29)

Iron and Steel

- (30) Britain's dominance of world production inevitably challenged as other countries industrialised. Britain's share of world production of pig iron fell from 50% in 1870 to 13% in 1913. Germany's share rose from 10% to 21%. Most dramatic growth in USA, where share of world production rose from 14% to 40%. *Classic Industrial Rev industry where Brit declines in relative terms compared to other industries. US needs a lot of steel to industrialise: share increases to 40%.*
- (31) In steel Britain's share also fell dramatically from 43% to 10%. Germany's share remained stable and the USA's share again increased dramatically. But whereas in pig iron Britain's output grew only slowly, in steel Britain's output grew at 8.6% per annum during 1870-1913. *Brit has less need for steel & iron - a lot of dismantling as infrastructure of railroads is complete.*
- (32) GB iron and steel exports continued to grow, remaining higher than German exports until just before WWI, while US exports lower throughout pre-WWI period.
- Although import penetration grew in Britain, this reflects GB's commitment to free trade while Germany and the USA strongly protected their iron and steel producers. *Europe is industrialising: Britain allows other companies to compete domestically, so share falls but productivity increases.*
- (33) Figures on output and export shares often used to support allegations of entrepreneurial failure: **Tolliday and Wengenroth** see these trends as inevitable consequence of economic maturity in Britain, coupled with tariff protection in rapidly growing German and US markets.
- (34) (**Tolliday and Wengenroth**) point to rapid growth of demand in Germany and USA as result of general economic development.
- This created rapid growth in consumption of steel in these countries. However, Britain was excluded from these buoyant markets: *competitors erect tariffs so Brit relies on Empire and other export markets (Empire: Can/Aus...)*
- (35) But proponents of entrepreneurial failure go further, claiming that British entrepreneurs were technologically conservative. But when examine these issues in detail it is difficult to find evidence of entrepreneurial failure. *Until WWI? European market is centre of world: EoS. In 1914 everything changes - Europe becomes disintegrated, more hostile, policy responses to armament collapse the pre-1914 world.*
- (36) Productivity:
- Substantial US labour productivity lead in iron and steel. If revisionists correct, this should be explicable largely in terms of differences in resource and factor inputs (Cf. Factor endowments).
- McCloskey** claims little difference in TFP levels between GB and USA at this time. *He reckons overall productivity similar.*
- (37)

Shipbuilding

- (38) In shipbuilding Britain rose to dominate world markets in the second half of the C19 largely at expense of previously dominant USA.
- GB shipbuilding benefited from disruption of US Civil War (1861-65) and the underlying shift in comparative advantage due to rise of iron and steam helped British shipbuilding. *Brit does well: produces domestically and sells in Europe. US produces and sells in US. From 1860 - 1914 (steam era) Britain dominates production - navally etc.*
- (39) Revolution in shipbuilding, with shift from wooden sailing ships to iron steamships. Before this, Britain lacked ready supply of essential raw material (*timber*) for shipbuilding. US, with abundant timber, was the dominant shipbuilding nation.
- Data on shipbuilding output and employment in Britain suggest rapid growth: Net tonnage increase 1867-1911: 208,000 to 1.1 million.
- (40) International comparisons show that by early 1890s, Britain accounted for over 80% of world output. Britain's share remained over 60% up to WW1, despite build-up of German, US, French and Dutch capacity behind tariff barriers: Craft based flexible production system important in explaining success of British shipbuilders. *Brit Craft Unions highly effective in mobilising labour (high wage, high skills).*
- (41) Since shipbuilding industry highly cyclical, important to economise on fixed capital, a serious burden in downturns: This could be done by relying on skilled labour rather than machinery. *With machinery, you pay implicit cost, even if not using machine.*
- Britain's large stock of skilled workers created an advantage over US and European rivals: High proportion of skilled workers in GB shipyards (approximately half of the world was skilled)
- Ships don't lend themselves to mass production e.g. refrigerator ships (alt specifications).*
- (42) Given cyclical nature of shipbuilding, many skilled workers were 'amphibians' (worked both in shipyards and in domestic trades on land). Possible because of craft based organisation of production around separate trades of painters, plumbers, carpenters, metalworkers, etc. Given general thrust of literature on inadequacies of British craft based production system from late C19, shipbuilding is a really useful counter example. *With large, homogenised products Brit fails comparatively: comparative advantage lies in customised products.*
- (43) This industry successfully precisely because of its craft based production methods: problem of demarcation.
- McCloskey** and **Sandberg** claim that latest technology not necessarily most efficient for all markets. Latest technological developments adopted more quickly in less successful German and USA shipyards, to get around problem of shortages of skilled labour. *Ent Failure argues Brit not well adapted institutionally or culturally, missing boat on late part of Ind Rev. Brit has absolute advantage in shipbuilding - US: unskilled, high scale, homogenous domestic market, high through-put, resource abundant.*
- (44) One cloud on horizon arising from Britain's dispute on craft based production methods: problem of demarcation.
- From late C19 growing frequency of demarcation disputes between many trades represented by their craft unions (on the Tyne, average of one major strike per month over demarcation issues between 1890 and 1893). *Brit has craft industries: each task has its own union, which is a power system for an industry like shipbuilding (specialised). Demarcation is big issue, however, unions lose power if they don't own industry.*
- (45) **Pollard & Robertson**: demarcation disputes a minor annoyance at this time, to set against enormous benefits of craft based system: disputes did not significantly retard technical change or rate of growth of the industry at this time, nevertheless, output and employment figures show productivity peaking in 1891 and then stagnating. *Union system has potential to develop into a problem as nature of British industry changes.*
- (46) Shipbuilding is good example of Marshallian external economies of scale: large number of specialised producers highly localised in N.E. England on Tyne, Tees and Wear rivers, and in Scotland on the Clyde.
- The absence of a US/UK productivity gap also reflects facts that mass production methods had not yet been successfully applied to shipbuilding: Not until widespread application of prefabrication and welding techniques to tanker production in 1950s.
- Industry benefits as more shipbuilders agglomerate. Highly spec firm means external EoS exists- this is an example where Brit entrepreneurs succeed: they understand the market, the workforce, etc.*
- (47) Hence, shipbuilding is a good counter example to claims that British entrepreneurs failed. The crafts based approach to production, that was better suited to most British industries was able to maintain an advantage over mass production for longer in shipbuilding, but also highlights that the latest technology isn't necessarily best for all economies. *And because mass technology took longer to penetrate shipbuilding the point about focussing on advantageous means of production is well highlighted*
- (48)

Cotton Textiles

- (49) The British cotton industry continued to expand output and exports during 1850-1913. Indeed, Britain retained a large share of world spinning and weaving capacity right up to WWI. Cotton textiles accounted for half the value of British exports in 1830 and still accounted for a quarter in 1913. *Epicentre of debate: Ind Rev born in mills in N of Eng, by 1914 Brit clothed the world. Cotton textiles sits low on the value-add chain, export competitive.*
- (50) At the time, criticism of cotton industry focused on social issues. Such as treatment of women and children in factories, since *economic performance generally seen as good*. But once cotton had collapsed between the wars, people began to look back with hindsight, and see if they could trace origins of decline in pre-WWI period: *no longer an industry, just a craft.*
- (51) Principal allegations were of technological conservatism:
- in spinning, *Brit Ent* delayed: staying with old style mule spinning rather than adopting to ring spindle.
 - in weaving, delay in switching from power loom to automatic loom.
- Both techniques more widely adopted in USA, and in other countries
- These modern technologies were invented in the USA (so consider differing factor endowments as a factor in the decision to use of not to use)
- (52) **Sandberg** examines technological decisions to retain mule in Lancashire spinning section, and powerloom in weaving section.
- Key conclusion: they were rational, given conditions faced by Lancs. producers(*"perfectly reasonable and rational decision not to switch."*) Ring spinning usually seen as a high through put technique, because whereas mule spinning was intermittent, ring spinning was continuous. *With mule: skilled labour, conserved cotton better and could have higher efficiency of output, given inputs. It was better to use mule if you have a skilled workforce.*
- (53) Ring versus mule:
- In economic terms, principal gain of ring spinning over mule spinning was that it saved on labour costs: Ring spinning carried out by largely female unskilled labour whereas mule spinning required strength and skill of largely male operatives.
- This saving on labour costs had to be balanced against higher raw cotton costs, because ring frame put extra strain on the cotton.
- Advantage of high throughput methods: you can fire people- US could rely on skilled labour. Brit Ent had to deal with local supply.*
- (54) Ring versus mule:
- However, this extra raw cotton cost was relatively trivial for coarse yarns, because cheap short staple cotton could bear extra strain of ring spindle. Extra raw cotton costs more significant for fine yarns because high quality long staple cotton had to be used for ring spinning.
- US firms were right to install rings: low skill, unspecialised, low grade cotton.*
- (55) Ring versus mule:
- Generally, Sandberg found British and US mill owners acting rationally when installing new machinery. GB mill owners installed mules, except when specialising in sub-40 counts. US mill owners installed rings, except when specialising in v. high counts.
- (56) Ring versus mule account:
- Sandberg also takes account of fact that for many mill owners, capital costs of mule spinning had already been paid and were a sunk cost, so when looking at decision to scrap existing mules and move to rings, need to compare total costs of ring spinning with variable costs of mule spinning. *Fixed v Variable cost question: does cost of new machinery outweigh productivity gains?*
- (57) Power loom versus automatic loom:
- High productivity similar analysis of choice between old power loom and new automatic loom: The stopped automatic loom was a high throughput method, invented in US in 1894, and first introduced in Lancashire in 1900. It stopped automatically for breakages and automatically rethreaded shuttle.
- (58) Power loom versus automatic loom:
- Each worker could tend more automatic looms, so saved on labour costs, however, K costs higher since automatic looms more expensive. Choice of technology depended on relative costs of labour and capital. In Britain, where wages were lower, savings from adoption of automatic loom were less than in US - Hence rational to rely more on power loom in Lancs. *Automation meant saving on labour costs, a huge issue for US entrepreneurs. Brit had large pool of skilled labour, available relatively cheaply, however.*
- (59) Power loom versus automatic loom was wrong:
- Lazonick** argues that **Sandberg** was wrong to stress labour cost differences as key factor explaining slower diffusion of ring spinning and automatic loom in Britain. **Lazonick** argues instead for a number of 'institutional constraints': *Chandlerian thesis argued Brit institutions were not as good.*
1. Vertical specialisation (*US had all in-house workers/K: weavers were not packers, insurers, shipper etc.*)
 2. Industrial relations
 3. Liverpool cotton market
- (60) 1. Vertical specialisation
- The most important institutional constraint for Lazonick was vertical specialisation of spinning and weaving in Britain: Compared with existence of large vertically integrated firms in US. *In Brit, opposite case: Marshallian EoS.*
- This introduced a potential co-ordination problem:
- Weavers could only get full benefits of automatic loom if spinners also switched from mule to ring, while spinners could only get full benefit of ring frame if weavers also switched from power loom to automatic loom. *Game Theory.*
- (61) 2. Industrial relations
- Industrial relations system seen by **Lazonick** as second institutional constraint:
- Wage payments governed by specific piece rate systems, which set relationship between effort and pay, but mule spinners' wage lists did not specify normal standards of breakages arising from use of inferior cotton. *For employers, most important thing is output per unit: workers were not paid hourly.*
- (62) 2. Industrial relations
- Mill owners could use inferior cotton and pass on burden of extra breakages to workers.
- This produced (factor owner) bias in favour of mules, because rings required higher quality cotton anyway.
- Giving workers poor quality cotton to use was essentially extracting rent from workers at cost of technological improvement.*
- (63) 3. Liverpool cotton market
- Mill owners could only take advantage of wage system in this way because of proximity of Liverpool cotton market. Mill owners could buy specific grades of cotton and mix them to best advantage. Not open to cotton spinners in other parts of world, where cotton had to be ordered in less flexible way. *Brit does not grow cotton.*
- (64) **Saxonhouse & Wright** cast doubt on **Lazonick's** arguments: **Lazonick** suggests the British cotton industry should have made greater investment in rings and automatic looms, but unlikely this would have helped with situation in interwar period.
- The New England cotton industry, with its ring spinning, automatic looms and vertical integration, suffered even more catastrophic decline than Lancashire between the wars! *Problem facing Brit manufacturers was not going the US way, because then they'd be competing with every poor country in the world: Japan and India were using cotton to industrialise. Makes no sense for Brit to go down road Lazonick suggests (Chandlerian way).*
- (65) **Leunig** shows that lower British productivity in textiles is a statistical illusion. At every thread count, British producers are more productive than American: British producers tend to make finer qualities - UK comparative advantage in skilled labour, mules.
- Small, flexible production runs for particular export markets: No advantage to long production runs. *Looking at prices, low-quality, homogenous product prices were used in calc, but this not actually the case: everyone being assessed on low-quality cotton for purposes of industry statistics - Brit made tailored products.*
- (66) Britain exports, US consumes domestically: US cotton industry, for all its high throughput technology, wasn't competitive on world markets. Higher productivity was always more than offset by higher wages.
- The real question is: how the UK succeeded so well against low skill competitors, i.e. India, China, Japan. Quality production based on skilled labour. *Brit could not consumer all of cotton it produced: needed to export, to import food. At no point are US textiles cheap enough to compete with Asia, or quality enough to compete with Brit.*
- (67)

Conclusions

- (68) No trend deterioration in British comparative productivity performance pre 1914, Germany and US just catching up. Adjustment to competition from abroad/ Stable 2:1 US productivity lead/ Productivity similar in Germany.
- (69) Productivity gap with US accounted for by different technological choice, determined by demand conditions and factor endowments:
- Competition forced adoption of appropriate technology. *Labour scarce in US, skills plentiful in Brit.*
- (70) Variety of experience across industries, but central theme of spread of high-throughput production methods being the key variable to explain differing success and the productivity gap. E.g. shipbuilding: as long as mass production wasn't possible there was no productivity gap between Britain and the USA. *Cotton/ shipbuilding characterised by Marshallian EoS*
- (71) Chemicals
- Cartel led to inappropriate technological choice in soda ash: Numerous opportunities missed to switch to Solvay method.
- Probably the best case for entrepreneurial or institutional failure out of the industries we have considered. *Cartel system context: competitive decisions don't always make sense.*
- (72) Iron and steel
- Same element of inevitability to the substantial productivity gap, given Britain's levels of industrial development versus USA and Germany. Still evidence of failure though...
- (73) Shipbuilding
- Late spread of high-throughput production methods and superiority of flexible, crafts based production explains relative success of industry and no productivity gap pre 1914. *Britain can, and does, compete anywhere where flexible and skilled labour is required.*
- Cotton textiles
- Mass production in US but UK competitive on basis of flexible production with external economies of scale → small productivity gap
- Would have been competing with India and Japan otherwise".*
- (74)

Extra slides

- (75) **Chandler** pioneered the critique that Britain failed to develop: Professional, hierarchical management; Efficient scale (large) vertically integrated plants. Thus, they are overtaken by the corporate USA. *Championed by Lazonick.*
- Elbaum** and **Lazonick** develop this critique:
- "Inherited and persistent constraints impeded British firms from acquiring the market control, authority in labor relations, or managerial hierarchy necessary to avail themselves fully of modern mass production methods."

- (76) **Hannah** has recently argued that (pre-1914) much of our inherited ("Chandlerian") wisdom about the period is based on myths.
- Three popular myths.
- European markets were smaller than American
 - European factories were smaller than American
 - British firms were family owned and managed

- (77) Myth of the small market
- The American market is thought to have been large, homogenous, and without interstate tariff barriers. This is true. But European markets were even larger, and perhaps better integrated, with telegraph union, postal union, rail union, etc...
- Tariffs were moderate: 4-9% of import values, vs. US 28%. By WWI, Germany and UK were largest trading partners!
 - Compensated by lower transport costs. Europe: Efficient, competitive multi-mode transport/ America: Long distances, rail and (poor) roads

- (78) In 1907, Britain had 388 "giant" factories. The US had 546 (1000+ employees)
- Roughly comparable % of Mfg. workers in "giants" in each: UK 12.4%, US 14.8%.
- But remember that the UK has a higher % of total workers in manufacturing.
- Britain was competitive with the US in scale before 1914, and Germany was not far behind.
- Large European markets mean that the size of the domestic market is not so relevant for achieving large scale.

- (79) **Chandler** argued that British firms suffered from being family-owned and operated
- Lack of professionalized management structures
 - Failure to transition to the corporate economy
- This assumes that British firms actually were not family owned and operated. Were they?

- (80) **Foreman-Peck** and **Hannah** definitely not
- Family ownership and management is generally much more common in the US and Germany!
- UK had the world's most developed stock markets; Dispersed shareholders, thousands per company; Vote share of directors was less than 3%, Except in brewing (?). Difficult to sustain that 3% of company votes held back the whole UK economy

- (81) Lesson One: Don't confuse pre-1914 with interwar
- The collapse in European trade starts during the war, with predictably awful consequences for British trade intermediation (shipping) and optimal plant scale. The Rule of Historiography: Historians write the past using the prejudices of the present
- Britain may have had sub-scale factories with shambolic management by the 1970s, but not in 1914

- (82) Lesson Two: Don't take mythmaking at face value!
- America overtakes Britain. 1850-1950;
- In this time, American firms became vertically integrated and professionally managed;
- America must have succeeded because of this process: Britain must have failed to develop these things.

But this assumes Chandler was not only right about why industries succeed, but that there was no other reason for success or failure...